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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report was a followup to, Collection and Analysis of Specific ELINT Signal Parameters, DTIC #A166507, 23 Jun 85. The programs and hardware assembled for the above mentioned report were used to analyze two types of radars, the PPS-6 and the HOOD radars. The typical ELINT parameters of frequency, pulse width, and pulse repetition rate were collected and analyzed.		

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

U.S. ARMY INTELLIGENCE CENTER AND SCHOOL  
Software Analysis and Management System

Collection and Analysis of Specific Elint  
Signal Parameters: Final Report

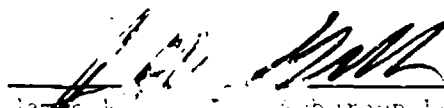
Technical Memorandum No. 8

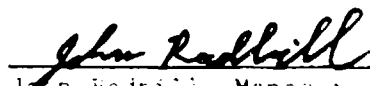
December 9, 1985

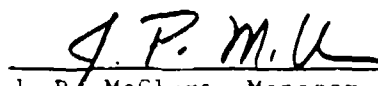
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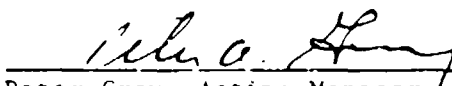
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Pasadena, California

# PREFACE

The work described in this publication was sponsored by the United States Army Intelligence Center and School. The writing and publication of this paper was supported by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration, NAS 7-918, RE 182, A187.

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## INTRODUCTION

This contract is for the development of test configurations and supporting software to facilitate the collection and analysis of specific ELINT signal parameters. The fixed price research and development contract is being performed by Electronic Systems under JPL Contract No. 957176, Modification No.1.

Mr. James Gillis and Dr. Lonnie Wilson met on 8 August 1985 to initiate and coordinate the details of contract No. 957176, Modification No. 1. This early meeting satisfies the preliminary oral briefing requirement by Electronic Systems. The interim report was submitted and reviewed on September 20, 1985. This final report is submitted on September 27, 1985. The Statement of Work section of this report is a direct reproduction of Article 1, revised Statement of Work of the modified contract. In addition to the collection and analysis included in the SOW, Electronic Systems agreed to perform third and fourth central moment calculations and 25 through 75 interpercentile range calculations.

The following tasks have been completed and analysis results are being reported in the report:

1. The single pulse ELINT Parameter Measurement Processor has been assembled.
2. Data collection software has been written and debugged.
3. Frequency, pulsewidth and PRI sampled data have been collected on two radars.
4. Data processing and analysis software has been updated for all statistical and histogram analysis.
5. Statistical and histogram analysis have been performed on frequency, pulsewidth, and PRI sampled data.



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# SUPPLEMENTAL AGREEMENT STATEMENT OF WORK

CONTRACT NO. <b>957176</b>	MODIFICATION NO. <b>1</b>	TASK ORDER NO. <b>RE182/A187</b>	PAGE NO. <b>1</b>	NO. OF PAGES <b>3</b>
TO: (CONTRACTOR'S NAME AND ADDRESS)  <b>ELECTRONIC SYSTEMS 22560 Murietta Road Salinas, CA 93908</b>		ISSUED BY  <b>JET PROPULSION LABORATORY CALIFORNIA INSTITUTE OF TECHNOLOGY 4800 OAK GROVE DRIVE PASADENA, CALIFORNIA 91109</b>		

THE ABOVE NUMBERED CONTRACT IS MODIFIED AS FOLLOWS.

1. ARTICLE 1, STATEMENT OF WORK, is revised as follows:

(a) Add paragraph (a)(3) as follows:

(3) Perform the following additional tasks on two (2) radar systems:

- (A) Develop and test data collection software for ELINT data (frequency and pulsewidth parameters) with the Instantaneous Frequency Measurement (IFM) sensor.
- (B) Perform data collection and signal processing analysis using the IFM sensor for frequency and pulsewidth parameters.
- (C) Perform statistical analysis of the sampled data collected with the IFM sensor. Sampled data plots, histograms, and statistical analysis will be performed for each of the two (2) radar systems.
- (D) Upon completion of the tasks described in paragraphs (a)(3)(A) through (a)(3)(C) on one radar system, the decision to perform the tasks on the second system will be based on the interim test results from the first system.

(b) Add paragraphs (b)(4) and (b)(5) as follows:

- (4) Provide oral and written preliminary and interim reports describing the proposed method of analysis and the analysis used on each radar system.
- (5) Provide an overall final oral and written report analyzing the overall results from this additional work.

EXCEPT AS HEREBY MODIFIED, ALL TERMS AND CONDITIONS OF SAID CONTRACT AS HERETOFORE MODIFIED REMAIN UNCHANGED AND IN FULL FORCE AND EFFECT.

NAME OF CONTRACTOR  <b>ELECTRONIC SYSTEMS</b>		CALIFORNIA INSTITUTE OF TECHNOLOGY	
SIGNATURE BY <u>Lonnie A. Wilson</u> DATE <u>7/18/85</u>	AUTHORIZED SIGNATURE		DATE
TYPED NAME <b>Lonnie A. Wilson</b>	TYPED NAME		
TITLE <b>Cent</b>	TITLE		



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## CONTRACT MODIFICATION

(Continued)

CONTRACT NO.	MODIFICATION NO.	TASK ORDER NO.	PAGE NO.	NO. OF PAGES
957176	1	RE182/A187	2	3

(c) Delete paragraph (c)(1) and substitute:

- (1) Three (3) copies of an interim written report describing the results of the work performed under paragraphs (a)(2) and (a)(3).

(d) Add paragraph (d)(6) as follows:

- (6) Decide whether or not to proceed with performing the tasks on the second radar system within five (5) working days after receipt of the interim results from the first radar system.

2. ARTICLE 2, DELIVERY OR PERFORMANCE SCHEDULE, is revised as follows:

(a) Delete paragraphs (c)(1) and (c)(6) and substitute:

- (1) Collect and analyze ELINT signal  
parametrics as specified in  
paragraph (a)(2) and perform the  
additional tasks described in  
paragraph (a)(3) Date of Contract through  
September 30, 1985.
- (6) Final written report summarizing  
all work as specified in paragraph  
(c)(2) Delivered.

(b) Add paragraphs (c)(7) and (c)(8) as follows:

- (7) Interim written report describing  
the results of the additional tasks  
as specified in paragraph (b)(4) August 30, 1985
- (8) Final written report describing  
the results of the additional tasks  
as specified in paragraph (b)(5) September 30, 1985



## ELINT PARAMETER MEASUREMENT PROCESSOR

IFM (Instantaneous Frequency Measurement) and RF Electronic Counter sensors were employed to measure, collect, and analyze ELINT signal parameters associated with an AN/PPS-6 radar and the Hood radar. These actual ELINT or Electronic Support Measures (ESM) sensors with an accompanying RF to IF downconverter have been employed by several platforms to measure precision frequency and precision PRI parameters.

The complete ELINT sensor system employed for data collection and analysis under this modified contract is shown in figure 1. The RF/IF downconverter converts the RF input signal to an IF signal at approximately 410 MHz. The wideband downconverter was specifically designed not to color the signal waveform.

The IFM and HP 5345A Electronic Counter sensors were used to collect and measure the ELINT parameters. The data collection, statistical data processing, and histogram software programs were written on the HP-85 microcomputer. Floppy discs are used to store data sets and results are plotted using the HP-7470A plotter.

The software programs developed for this analysis are:

1. GETVAL Program - This program is used to collect data with the RF Electronic Counter sensor.
2. TPLOT Program - The data samples are plotted as a function of time.
3. HPLOT Program - The data collected using GETVAL program can be analyzed in histogram form with this program.

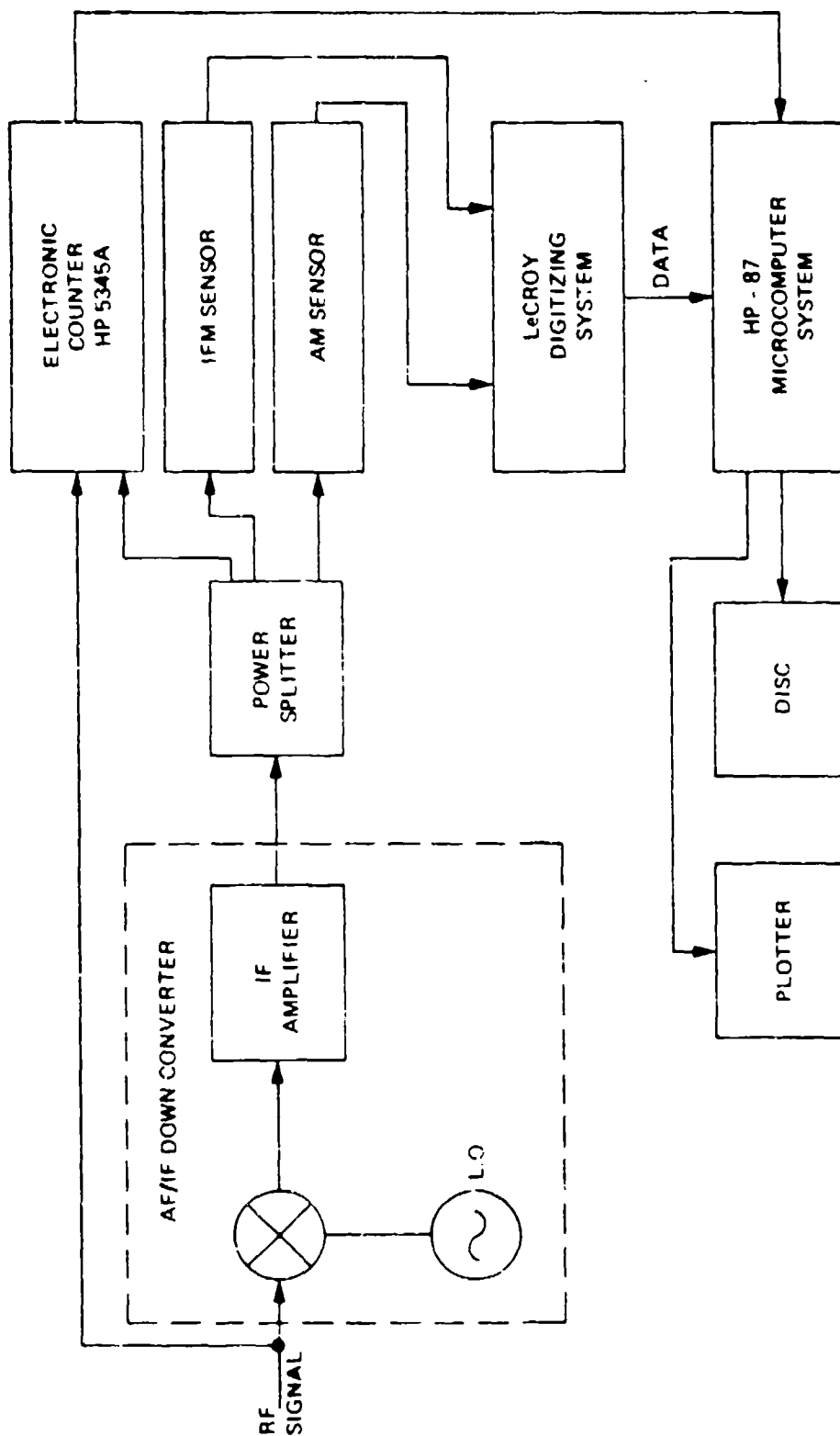


Figure 1. Modified ELINT Parameter Processor Using IFM Sensor and MW Electronic Counter

4. DATAS Program - This program is used to compute the statistical parameters associated with the data.

5. PRINTP Program - This program prints the statistical parameters derived from the DATAS Program.

6. HISTP Program - This program plots the theoretically expected histogram and the measured data histogram on one plot.

7. HCROY and other Programs - These programs allow data collection with the IFM sensor and LeCroy Digitizing System and data transfer to the HP-87 computer system for analysis.

Computer programs 1 through 6 were developed under the original contract, while program 7 was developed under the modified contract. The HCROY program is listed in Appendix A of this report.

## ANALYSIS ALGORITHMS

The analysis algorithms used in this modified contract are identical to the algorithms used in the original contract. These algorithms will not be repeated again.

## TEST RESULTS

### 1. HOOD Radar

#### a. Single Pulse Frequency

Two sets of single pulse frequency sampled data were collected and analyzed for the HOOD radar. The IFM sensor was employed to make these measurements.

Table 1 contains the summary statistical results for this analysis and Appendix B contains a more detailed analysis of the single pulse frequency sampled data.

#### b. Single Pulse Pulsewidth

Four sets of single pulse pulsewidth sampled data were collected and analyzed for the HOOD radar. The Microwave Counter sensor was employed to make these measurements.

Table 2 contains the summary statistical results for this analysis and Appendix C contains a more detailed analysis of the single pulse pulsewidth sampled data.

#### c. Single Pulse PRI

Four sets of single pulse (more accurately defined as one pulse to the next pulse) PRI sampled data were collected and analyzed for the HOOD radar. The Microwave Counter sensor was employed to make these measurements.

Table 3 contains the summary statistical results for this analysis and Appendix D contains a more detailed analysis of the single pulse PRI sampled data.

#### **d. Average Frequency**

Four sets of average frequency sampled data were collected and analyzed for the HOOD radar. The Microwave Counter sensor was employed to make these measurements. Approximately 300 pulses were averaged into one sampled data point.

Table 4 contains the summary statistical results for this analysis and Appendix E contains a more detailed analysis of the average frequency sampled data.

#### **e. Average Pulsewidth**

Four sets of average pulsewidth sampled data were collected and analyzed for the HOOD radar. The Microwave Counter sensor was employed to make these measurements. Approximately 300 pulses were averaged into one sampled data point.

Table 5 contains the summary statistical results for this analysis and Appendix F contains a more detailed analysis of the average pulsewidth sampled data.

### **2. PPS-6 RADAR**

#### **a. Single Pulse Frequency**

Two sets of single pulse frequency sampled data were collected and analyzed for the PPS-6 Radar. The IFM sensor was employed to make these measurements.

Table 6 contains the summary statistical results for this analysis and Appendix G contains a more detailed analysis of the single pulse frequency sampled data.

**b. Single Pulse Pulsewidth**

Four sets of single pulse pulsewidth sampled data were collected and analyzed for the PPS-6 radar. The Microwave Counter sensor was employed to make these measurements.

Table 7 contains the summary statistical results for this analysis and Appendix H contains a more detailed analysis of the single pulse pulsewidth sampled data.

**TABLE ONE**  
**HOOD RADAR**  
**ELINT PARAMETER ANALYSIS - SINGLE PULSE FREQUENCY**

STATISTICAL PARAMETER	DATA SET	P4SNABCD	P4SNEFGH
MEAN VALUE (MHz)		418.49	419.29
MEDIUM VALUE (MHz)		418.49	419.29
DATA RANGE (MHz)		2.57	2.12
STANDARD DEVIATION (MHz)		0.278	0.38
COEFFICIENT OF SKEWNESS		0.32	0.066
COEFFICIENT OF KURTOSIS		3.35	2.69
CHI-SQUARED		95. (9c)	34. (11c)
25 - 75 INTER - PERCENTILE RANGE MHz (approximate)		0.467 (87%)	0.41 (55%)



**TABLE TWO**  
**HOOD RADAR**  
**ELINT PARAMETER ANALYSIS - SINGLE PULSE PULSEWIDTH**

<b>DATA STATISTICAL SET PARAMETER</b>	<b>P4SPWA</b>	<b>P4SPWB</b>	<b>P4SPWC</b>	<b>P4SPWD</b>
<b>MEAN VALUE (nsec.)</b>	263.7	263.13	262.79	262.33
<b>MEDIUM VALUE (nsec.)</b>	263.7	263.13	264.79	262.33
<b>DATA RANGE (nsec.)</b>	22.	22.	22.	22.
<b>STANDARD DEVIATION (nsec.)</b>	4.1	4.18	4.02	4.31
<b>COEFFICIENT OF SKEWNESS</b>	-0.69	-0.63	-0.71	-0.55
<b>COEFFICIENT OF KURTOSIS</b>	3.2	3.05	3.14	2.79
<b>CHI-SQUARED</b>	170. (11c)	222. (11c)	203. (11c)	119. (11c)
<b>25 - 75 INTER- PERCENTILE RANGE nsec. (approximate)</b>	4.0 (59%)	6.0 (68%)	6.0 (72%)	6.0 (60%)

**TABLE THREE**

**HOOD RADAR**

**ELINT PARAMETER ANALYSIS - SINGLE PULSE PRI**

DATA STATISTICAL SET PARAMETER	P4SRRA	P4SRRB	P4SRRC	P4SRRD
MEAN VALUE ( $\mu\text{sec.}$ )	222.18	222.18	222.19	222.19
MEDIUM VALUE ( $\mu\text{sec.}$ )	222.18	222.18	222.19	222.19
DATA RANGE ( $\mu\text{sec.}$ )	0.238	0.244	0.248	0.248
STANDARD DEVIATION ( $\mu\text{sec.}$ )	0.037	0.035	0.038	0.039
COEFFICIENT OF SKEWNESS	-0.027	0.21	-0.02	0.20
COEFFICIENT OF KURTOSIS	2.25	2.99	2.66	2.48
CHI-SQUARED	94. (17c)	42. (9c)	53. (19c)	92. (19c)
25 - 75 INTER- PERCENTILE RANGE $\mu\text{sec.}$ (approximate)	0.05(58%)	0.05(75%)	0.05(57%)	0.05(52%)

**TABLE FOUR**  
**HOOD RADAR**  
**ELINT PARAMETER ANALYSIS - AVERAGE FREQUENCY**

STATISTICAL PARAMETER	DATA SET	P4RFA	P4RFB	P4RFC	P4RFD
MEAN VALUE (MHz)		14,906.43	15,011.66	15,011.77	15,011.71
MEDIUM VALUE (MHz)		14,906.43	15,011.66	15,011.77	15,011.71
DATA RANGE (MHz)		1.11	0.69	0.41	0.77
STANDARD DEVIATION (MHz)		0.272	0.115	0.08	0.154
COEFFICIENT OF SKEWNESS		-0.12	-0.019	0.213	-0.27
COEFFICIENT OF KURTOSIS		2.19	2.69	2.35	2.17
CHI-SQUARED		362.(9c)	22.4(23c)	50.(13c)	99.(9c)
25 - 75 INTER- PERCENTILE RANGE MHz (approximate)		0.32 (56%)	0.18 (62%)	0.13 (65%)	0.26 (71%)

**TABLE FIVE****HOOD RADAR****ELINT PARAMETER ANALYSIS -AVERAGE PULSEWIDTH**

STATISTICAL PARAMETER	DATA SET	P3PWA	P3PWB
MEAN VALUE (nsec.)		224.07	223.48
MEDIUM VALUE (nsec.)		224.07	223.48
DATA RANGE (nsec.)		0.8	0.76
STANDARD DEVIATION (nsec.)		0.138	0.135
COEFFICIENT OF SKEWNESS		0.283	0.34
COEFFICIENT OF KURTOSIS		2.68	2.67
CHI-SQUARED		36. (9c)	40. (9c)
25 - 75 INTER- PERCENTILE RANGE nsec. (approximate)		0.18(65%)	0.17(65%)

**TABLE SIX**  
**PPS-6 RADAR**  
**BLINT PARAMETER ANALYSIS -SINGLE PULSE FREQUENCY**

DATA STATISTICAL SET PARAMETER	P1SNABCD	P1SNCDEF
MEAN VALUE (MHz)	407.40	407.12
MEDIUM VALUE (MHz)	407.40	407.12
DATA RANGE (MHz)	2.0	1.19
STANDARD DEVIATION (MHz)	0.225	0.172
COEFFICIENT OF SKEWNESS	0.400	0.752
COEFFICIENT OF KURTOSIS	4.43	5.15
CHI-SQUARED	177. (7c)	160. (11c)
25 - 75 INTER- PERCENTILE RANGE MHz (approximate)	0.23(76%)	0.11(58%)

**TABLE SEVEN**

**PPS - 6 RADAR**

**ELINT PARAMETER ANALYSIS - SINGLE PULSE PULSEWIDTH**

<b>DATA STATISTICAL SET PARAMETER</b>	<b>P1SPWA</b>	<b>P1SPWB</b>	<b>P1SPWC</b>	<b>P1SPWD</b>
<b>MEAN VALUE (nsec.)</b>	309.4	309.4	309.57	319.04
<b>MEDIAN VALUE (nsec.)</b>	309.4	309.4	309.57	319.04
<b>DATA RANGE (nsec.)</b>	10	10	10	14
<b>STANDARD DEVIATION (nsec.)</b>	1.45	1.39	1.52	2.08
<b>COEFFICIENT OF SKEWNESS</b>	-0.18	-0.24	-0.13	-0.21
<b>COEFFICIENT OF KURTOSIS</b>	3.08	3.16	3.16	3.0
<b>CHI-SQUARED</b>	231.(5c)	263.(5c)	95.(5c)	258.(7c)
<b>25 - 75 INTER PERCENTILE RANGE nsec. (approximate)</b>	2 (85%)	2 (87%)	2 (82%)	2 (68%)

## CONCLUSIONS

The following tasks have been completed during this development effort:

1. Data collection software for the IFM ELINT sensor has been completed. Part of the data collection software program is included in Appendix A.
2. Statistical analysis software has been revised and updated.
3. Single pulse frequency, single pulse pulsewidth, single pulse PRI, average frequency and average pulsewidth sampled data have been collected for the HOOD radar using the IFM sensor and the Microwave Counter sensor.
4. Frequency and pulsewidth sampled data have been collected for the AN/PPS-6 radar using the IFM sensor and the Microwave Counter sensor.
5. Statistical analysis of all sampled data have been completed. Summary statistical results are presented in the test results section of this report. Detailed statistical analysis results are presented in Appendix B, C, D, E, F, G, and H of this report.

## APPENDIX A

```
10 ! 'HCROY'
20 ! THIS PROGRAM GIVE SHORT MESSAGE CONSISTING OF 1 DATA POINT PORTO
30 ! THE HEADER IS DISCARDED, THEN THE DATA POINT IS CONVERTED TO
40 ! FREQUENCY. THIS IS THEN LOOPED FOR N DATA POINTS--LECRY
50 ! SELF-ANALYSIS LOOP MUST MATCH THIS LOOP
60 ! 6/4/85      RAG
70 DIM N$(24),B$(78),Y(1001) ! LENGTH OF N$ MUST MATCH # READ CHARACTERS
80 !      TRY TO GET THE FASTEST POSSIBLE BAUD RATE
90 CONTROL 10,3 ; 8 ! BAUD 8=1200 11=2400 13=4800 15=9600
100 CONTROL 10,4 ; 3
110 CONTROL 10,9 ; 5 ! RESET RX QUEUE
120 CONTROL 10,2 ; 0 ! DTR LOW
130 DISP "ENTER NUMBER OF DATA POINTS DESIRED"
140 INPUT N
150 DISP "START DATA"
160 CONTROL 10,9 ; 5
170 FOR J=1 TO N
180 FOR K=1 TO 17 ! GET HEADER AND IGNORE
190 CONTROL 10,2 ; 1 !      DTR ENABLE
200 ENTER 10 ; B$
210 NEXT K
220 CONTROL 10,2 ; 1 !      DTR ENABLE
230 ENTER 10 ; N$ ! GET STRING FROM LECROY
240 Y(J)=VAL (N$(10,15)) ! FIND STRING VALUE-VALUES MAY NEED ADJUSTMENT
250 DISP Y(J)
260 NEXT J
270 SHORT D(1001)
280 D(0)=N
290 DISP "SORTING!"
300 FOR K=1 TO N !      CONVERT CELL ARRAY TO FREQUENCY
310 V=Y(K)*2-256 ! OFFSET TO =-256 MV
320 D(K)=V/1000*92.38+401.2 ! INTERCEPT AND SLOPE TO FREQ ARRAY
330 DISP K,D(K)
340 NEXT K
350 BEEP 200,500 @ DISP "ENTER FILENAME  FILE.VOLUME"
360 INPUT F$
370 CREATE F$,1,N*6+8
380 ASSIGN# 1 TO  F$
390 FOR K=0 TO N
400 PRINT# 1 ; D(K)
410 NEXT K
420 ASSIGN# 1 TO  *
430 BEEP 250,500 @ DISP "DONE"
440 END
```



## APPENDIX B

### INTRODUCTION

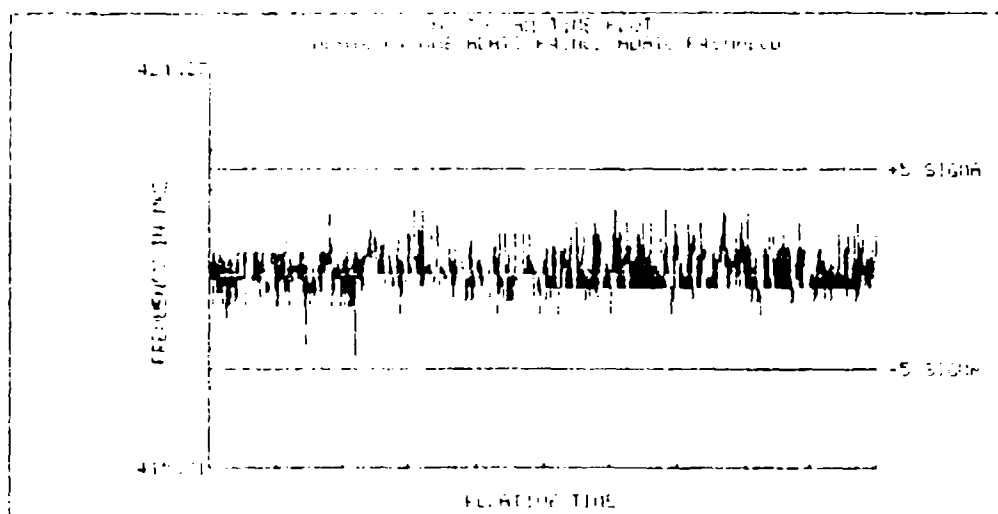
ELINT parameter test results are contained in this appendix for the single pulse frequency parameter associated with the HOOD radar. These measurements were performed with the IFM sensor. The single pulse frequency data sets are labelled P4SNABCD and P4SNEFGH.

### Single Pulse Frequency Sampled Data - P4SNABCD

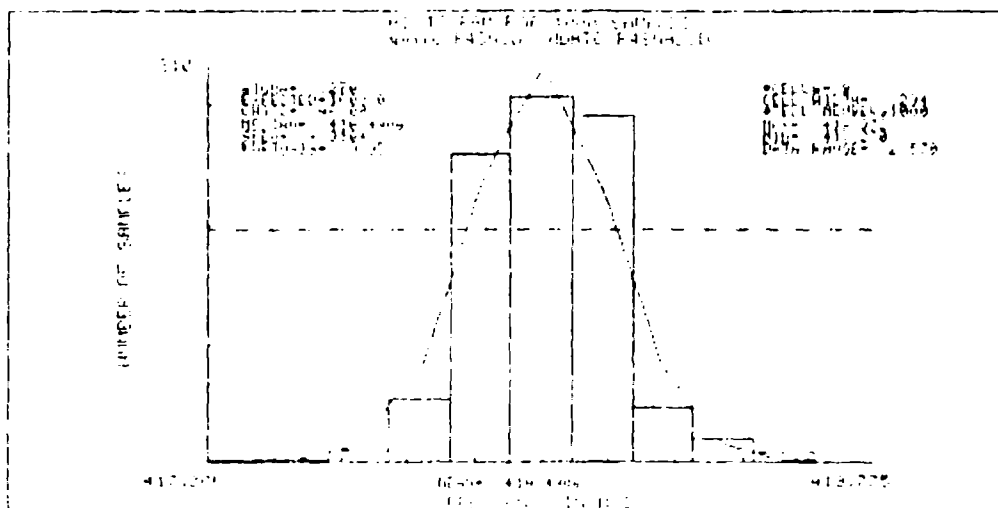
The statistical results of the single pulse frequency sampled data P4SNABCD are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this frequency data set.

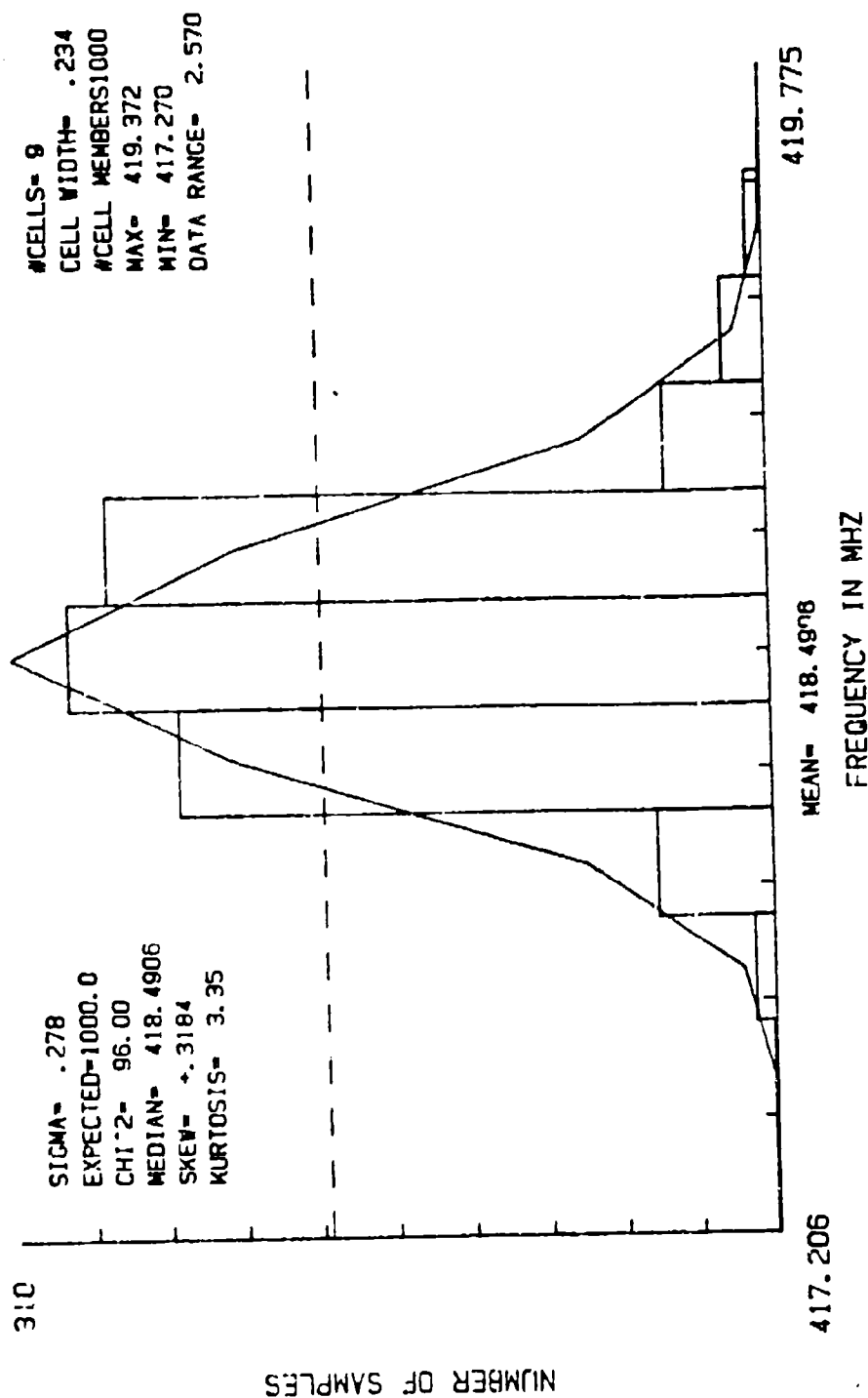
FILENAME/HOATC/P4SNAB/HOATC/P4SNCD/HOATC/P4SNABCD  
 START TIME IS 11:54:59 85/09/14  
 MEAN= 410.4906  
 MAX VALUE= 419.3723 MIN VALUE= 417.2700 RANGE= 2.10  
 SIGMA= .2780  
 COEFFICIENT OF SKEWNESS= +.3184  
 COEFFICIENT OF KURTOSIS= 3.3486  
 OUT-OF-RANGE DATA POINTS= 0 POINTS  
 EXECUTION TIME= 72 SECONDS



HPLT EXECUTION TIME= 5.08MINUTES,



# HISTOGRAM FOR 1000 SAMPLES /HDATA/P4SNCD /HDATA/P4SNABCD



FILE /HDATA/P4SNABCD

PLOT MIN= 417.2058 PLOT MAX= 419.7753  
DATA MIN= 417.2700 DATA MAX= 419.3723

CELL #	CENTER	# SAMPLES	EXPECTED
1	417.3226	1	.049
2	417.5562	1	1.180
3	417.7898	9	13.972
4	418.0234	52	81.656
5	418.2570	262	235.517
6	418.4906	310	335.249
7	418.7242	293	235.517
8	418.9577	46	81.656
9	419.1913	19	13.972
10	419.4249	7	1.180
11	419.6585	0	.049

MEAN VALUE= 418.4906  
STANDARD DEVIATION= .2780  
COEFF OF SKEWNESS= 4.3184  
COEFF OF KURTOSIS= 3.3486  
CHI-SQUARED= 95.9981  
MEDIAN X VALUE= 418.4906  
CELL WIDTH= .233591  
PLOT RANGE= 2.5695  
SUM ACTUAL= 1000  
SUM EXPECTED= 999.9980

87.1PERCENT OF DATA LIES BETWEEN 418.2570 AND 418.7242

#### Single Pulse Frequency Sampled Data - P4SNEFGH

The statistical results of the single pulse frequency sampled data P4SNEFGH are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this frequency data set.

FILENAME/HDATC/P4SNEFGH

START TIME 1514:19:4385/09/14

MEAN= 419.2898

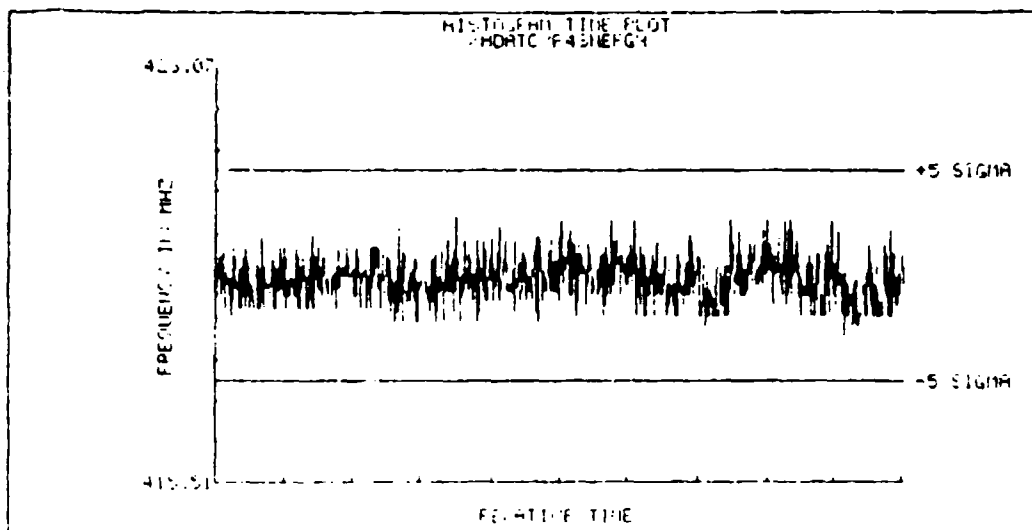
MAX VALUE= 420.3706 MIN VALUE= 418.2485 RANGE= 2.12

SIGMA= .3779

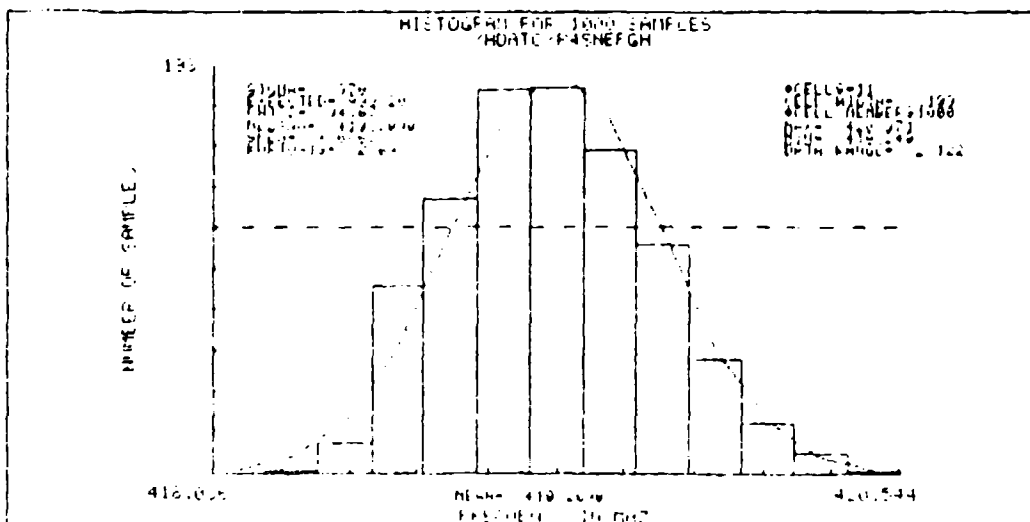
COEFFICIENT OF SKEWNESS= +.0662

COEFFICIENT OF KURTOSIS= 2.6887

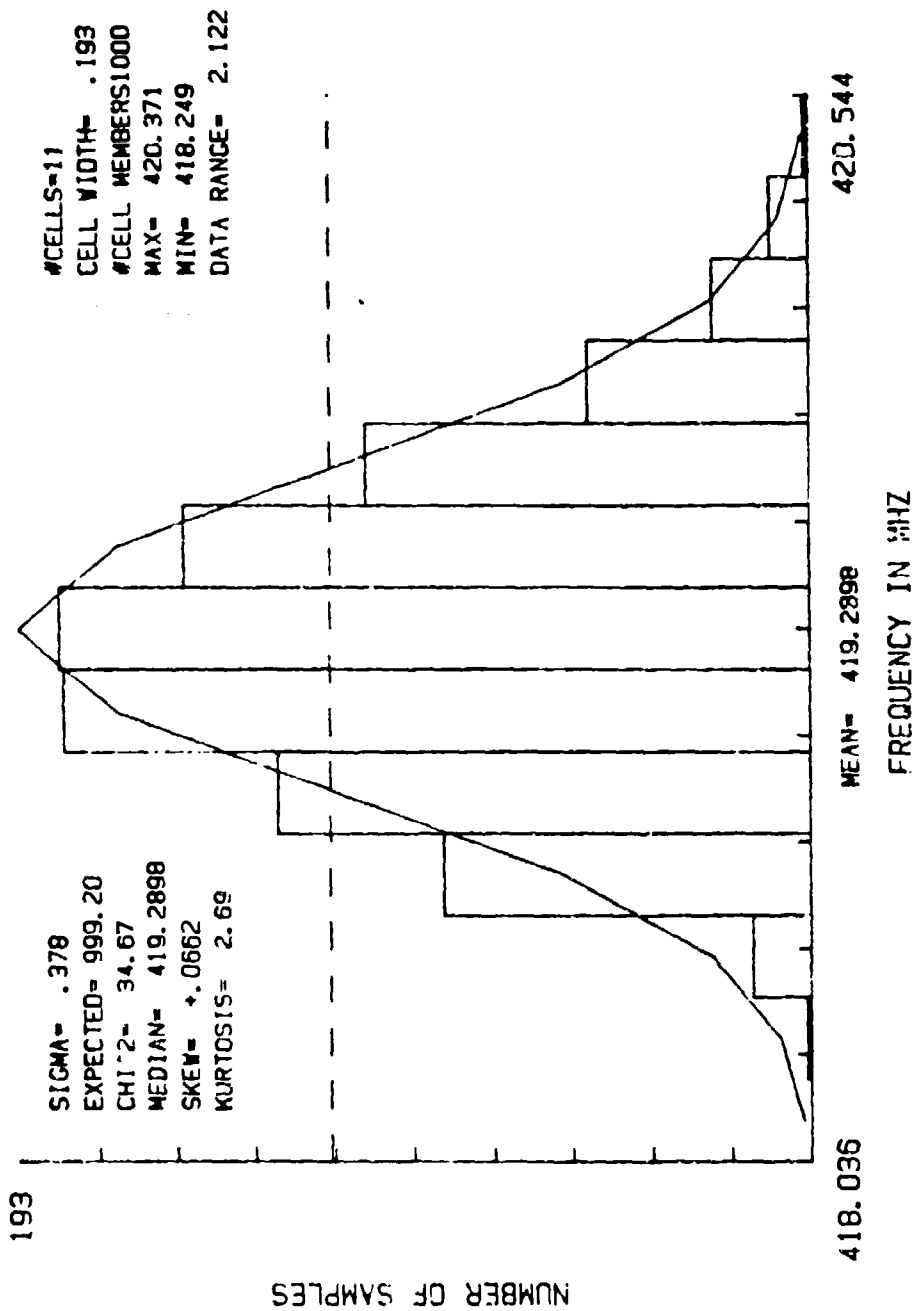
OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= .4244080000000062  
 IF N1= 7 CW= .303140571428616  
 IF N1= 9 CW= .2357022222222257  
 IF N1= 11 CW= .1929127272727256  
 IF N1= 13 CW= .16323384615387  
 IF N1= 15 CW= .1414693333333354  
 IF N1= 17 CW= .124825882352959  
 IF N1= 19 CW= .11168631578949  
 IF N1= 21 CW= .101049523809539  
 IF N1= 23 CW= .0927625086956657  
 IF N1= 25 CW= .0848816000000174  
 IF N1= 27 CW= .0705940740740856  
 HPL01 EXECUTION TIME= 5.52MINUTES.



# HISTOGRAM FOR 1000 SAMPLES /H0ATC/P4SNEFCH





FILE /HDATA/P4SNEFGH

PLOT MIN= 418.0359 PLOT MAX= 420.5437  
DATA MIN= 418.2485 DATA MAX= 420.3706

CELL #	CENTER	# SAMPLES	EXPECTED
1	418.1323	0	1.870
2	418.3252	1	7.838
3	418.5181	15	25.322
4	418.7111	94	63.039
5	418.9040	137	120.933
6	419.0969	192	178.774
7	419.2898	193	203.654
8	419.4827	161	178.774
9	419.6756	114	120.933
10	419.8685	57	63.039
11	420.0615	25	25.322
12	420.2544	10	7.838
13	420.4473	1	1.870

MEAN VALUE= 419.2898  
STANDARD DEVIATION= .3779  
COEFF OF SKEWNESS= +.0062  
COEFF OF KURTOSIS= 2.6087  
CHI-SQUARED= 34.6679  
MEDIAN X VALUE= 419.2898  
CELL WIDTH= .192913  
PLOT RANGE= 2.5078  
SUM ACTUAL=1000  
SUM EXPECTED= 999.2038

55.2 PERCENT OF DATA LIES BETWEEN 419.0969 AND 419.4827

## APPENDIX C

### INTRODUCTION

ELINT parameter test results are contained in this appendix for the **single pulse pulsewidth parameter** associated with the HOOD radar. These measurements were performed with the Microwave Counter sensor in the single pulse measurement mode of operation. The single pulse pulsewidth data sets are labelled:

P4SPWA

P4SPW **B**

P4SPWC

P4SPWD

#### Single Pulse Pulsewidth Sampled Data - P4SPWA

The statistical results of the single pulse pulsewidth sampled data P4SPWA are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.

FILE NAME/IDATE/P45F04

START TIME 1517:33:3065/09/07

MEAN= 263.7000

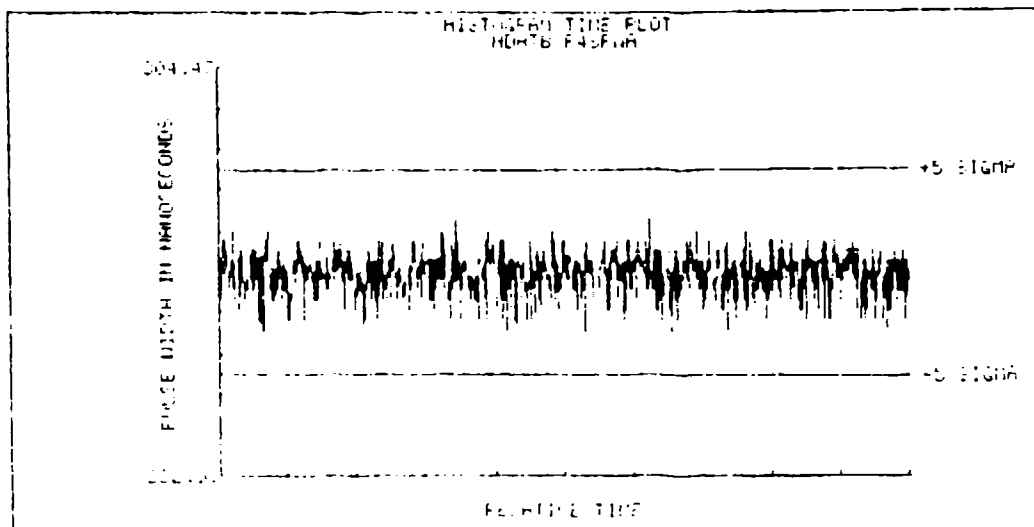
MAX VALUE= 274.0000 MIN VALUE= 252.0000 RANGE= 22.00

SIGMA= 4.0770

COEFFICIENT OF SKEWNESS= -.6933

COEFFICIENT OF KURTOSIS= 3.2034

OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= 4.4

IF N1= 7 CW= 3.14285714285714

IF N1= 9 CW= 2.44444444444444

IF N1= 11 CW= 2

IF N1= 13 CW= 1.69230769230769

IF N1= 15 CW= 1.46666666666667

IF N1= 17 CW= 1.29411764705882

IF N1= 19 CW= 1.15789473684211

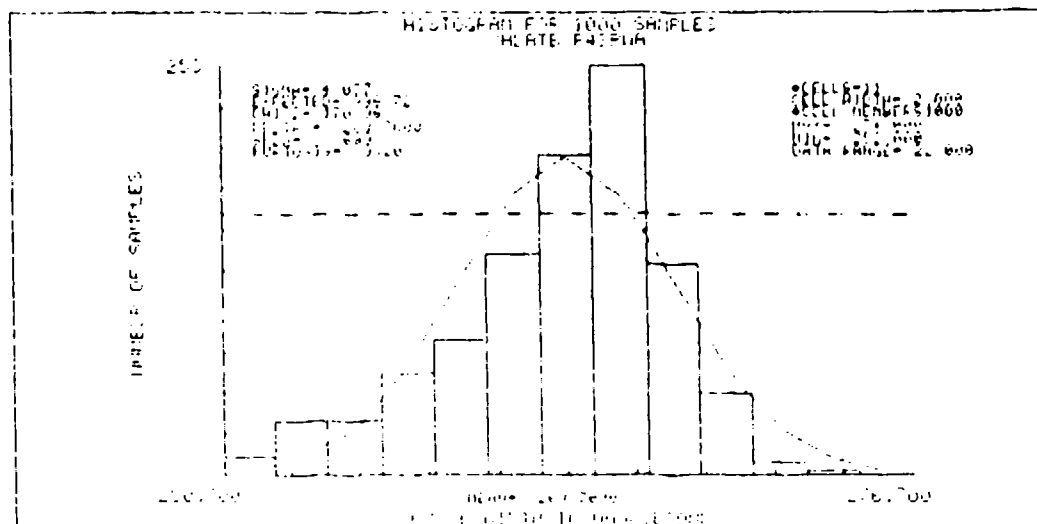
IF N1= 21 CW= 1.04761904761905

IF N1= 23 CW= .956521739130435

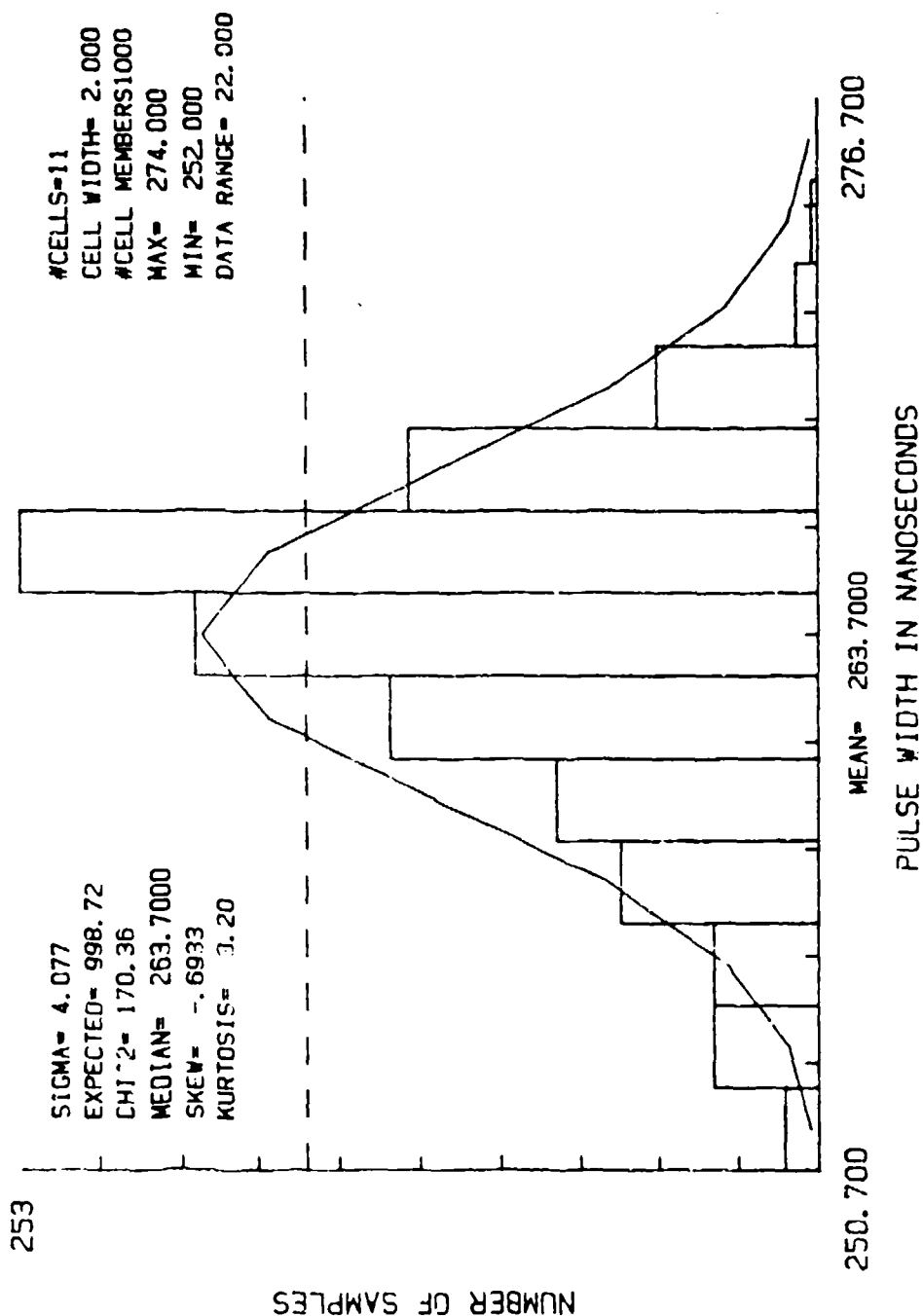
IF N1= 25 CW= .88

IF N1= 27 CW= .814814814814815

HPILOT EXECUTION TIME= 5.50MINUTES.



# HISTOGRAM FOR 1000 SAMPLES /HDATB/P4SPWA



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

FILE /H04TB/P4SPWA

PLOT MIN= 250.7000 PLOT MAX= 276.7000  
DATA MIN= 252.0000 DATA MAX= 274.0000

CELL #	CENTER	# SAMPLES	EXPECTED
1	251.7000	11	2.573
2	253.7000	33	9.665
3	255.7000	33	28.544
4	257.7000	63	66.267
5	259.7000	83	120.942
6	261.7000	136	173.517
7	263.7000	198	195.703
8	265.7000	253	173.517
9	267.7000	130	120.942
10	269.7000	51	66.267
11	271.7000	7	28.544
12	273.7000	2	9.665
13	275.7000	0	2.573

MEAN VALUE= 263.7000  
STANDARD DEVIATION= 4.0770  
COEFF OF SKEWNESS= -.6933  
COEFF OF KURTOSIS= 3.2034  
CHI-SQUARED= 170.3556  
MEDIAN X VALUE= 263.7000  
CELL WIDTH= 2.000000  
PLOT RANGE= 26.0000  
SUM ACTUAL= 1000  
SUM EXPECTED= 998.7207

58.8PERCENT OF DATA LIES BETWEEN 261.7000 AND 265.7000

#### Single Pulse Pulsewidth Sampled Data - P4SPWB

The statistical results of the single pulse pulsewidth sampled data P4SPWB are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.

FILE NAME/ID: 10/14/95/F45FQB

START TIME 1518:26:2165/03/07

MEAN= 263.1340

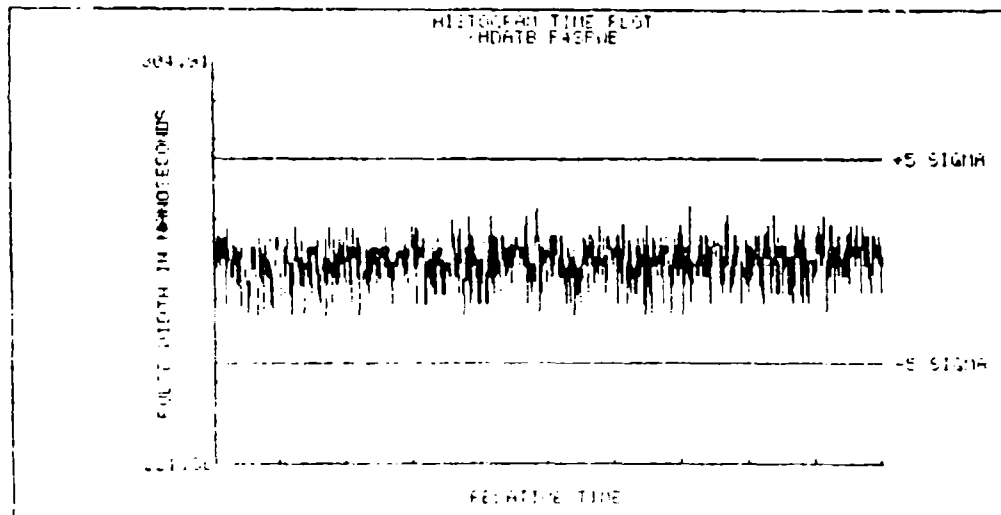
MAX VALUE= 274.0000 MIN VALUE= 252.0000 RANGE= 22.00

SIGMA= 4.1778

COEFFICIENT OF SKEWNESS= -.6312

COEFFICIENT OF KURTOSIS= 3.0452

OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= 4.4

IF N1= 7 CW= 3.14285714285714

IF N1= 9 CW= 2.44444444444444

IF N1= 11 CW= 2

IF N1= 13 CW= 1.69230769230769

IF N1= 15 CW= 1.46666666666667

IF N1= 17 CW= 1.29411764705882

IF N1= 19 CW= 1.15789473684211

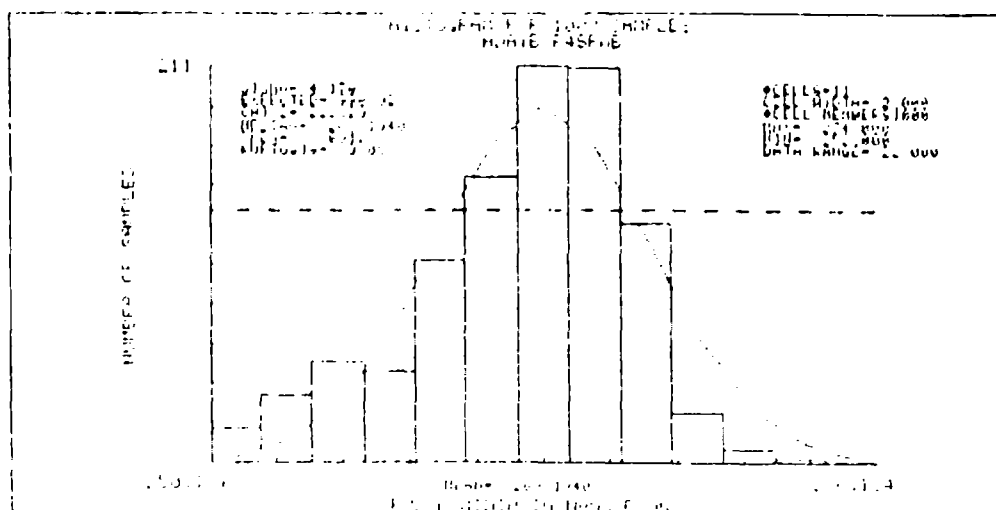
IF N1= 21 CW= 1.04761904761905

IF N1= 23 CW= .956521739130435

IF N1= 25 CW= .88

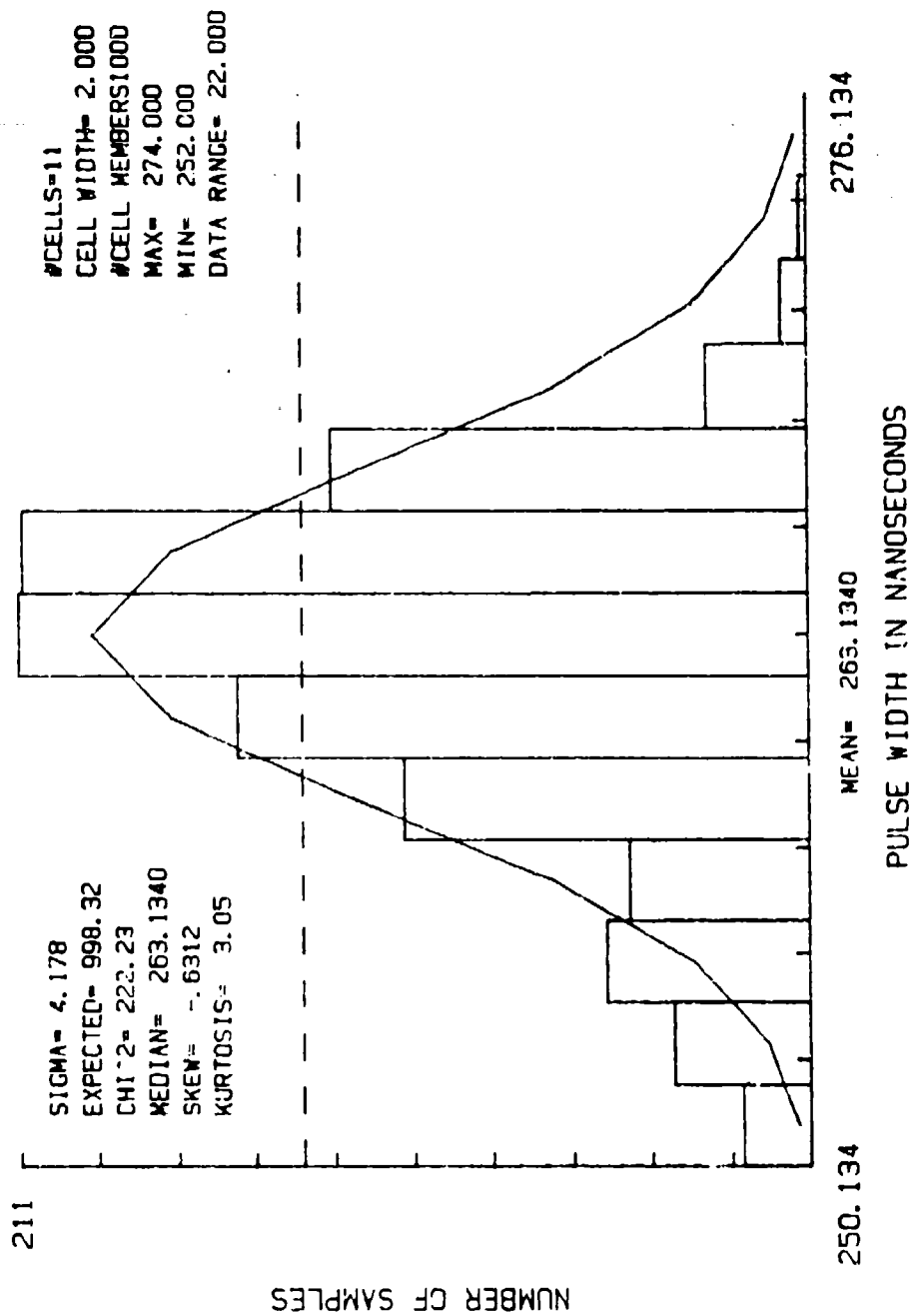
IF N1= 27 CW= .814814814814815

DPILOT EX. DURATION TIME= 5.07MINUTES.





# HISTOGRAM FOR 1000 SAMPLES /HDATB/P4SPWB



FILE /HDNTO/P4SPWB

PLOT MIN= 250.1340 PLOT MAX= 276.1340  
DATA MIN= 252.0000 DATA MAX= 274.0000

CELL #	CENTER	# SAMPLES	EXPECTED
1	251.1340	18	3.087
2	253.1340	36	10.886
3	255.1340	54	30.533
4	257.1340	48	68.095
5	259.1340	108	120.763
6	261.1340	152	170.305
7	263.1340	211	190.982
8	265.1340	210	170.305
9	267.1340	127	120.763
10	269.1340	27	68.095
11	271.1340	7	30.533
12	273.1340	2	10.886
13	275.1340	0	3.087

MEAN VALUE= 263.1340  
STANDARD DEVIATION= 4.1778  
COEFF OF SKEWNESS= -.6312  
COEFF OF KURTOSIS= 3.0452  
CHI-SQUARED= 222.2259  
MEDIAN X VALUE= 263.1340  
CELL WIDTH= 2.000000  
PLOT RANGE=26.0000  
SUM ACTUAL=1020  
SUM EXPECTED= 998.3187

68.2PERCENT OF DATA LIES BETWEEN 259.1340 AND 265.1340

#### Single Pulse Pulsewidth Sampled Data - P4SPWC

The statistical results of the single pulse pulsewidth sampled data P4SPWC are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.

FILENAME/IDATE/P45PWC

START TIME 1518:35:2885/09/07

MEAN= 262.7000

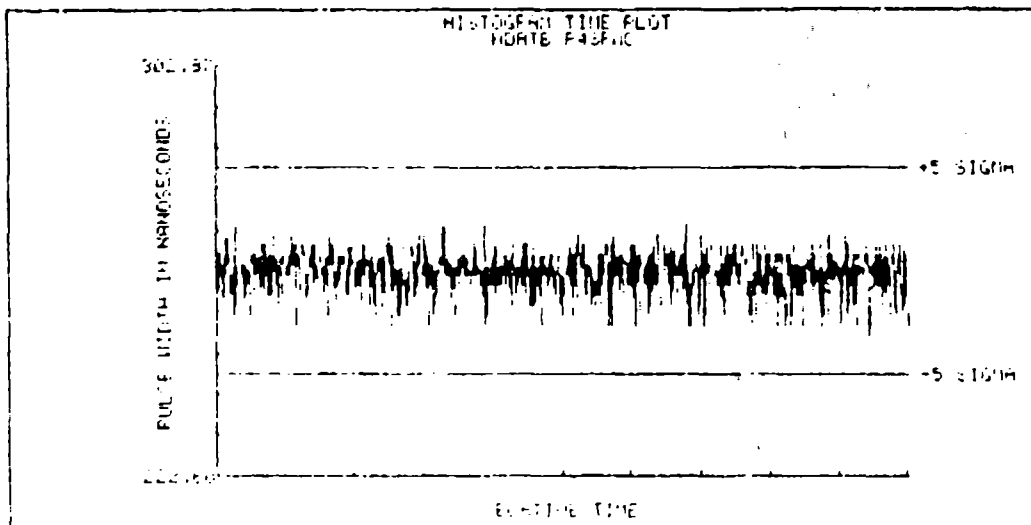
MAX VALUE= 272.0000 MIN VALUE= 250.0000 RANGE= 22.00

SIGMA= 4.0182

COEFFICIENT OF SKEWNESS= -.7145

COEFFICIENT OF KURTOSIS= 3.1438

OUT OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= 4.4

IF N1= 7 CW= 3.14285714285714

IF N1= 9 CW= 2.44444444444444

IF N1= 11 CW= 2

IF N1= 13 CW= 1.69230769230769

IF N1= 15 CW= 1.46666666666667

IF N1= 17 CW= 1.25411764705882

IF N1= 19 CW= 1.15789473684211

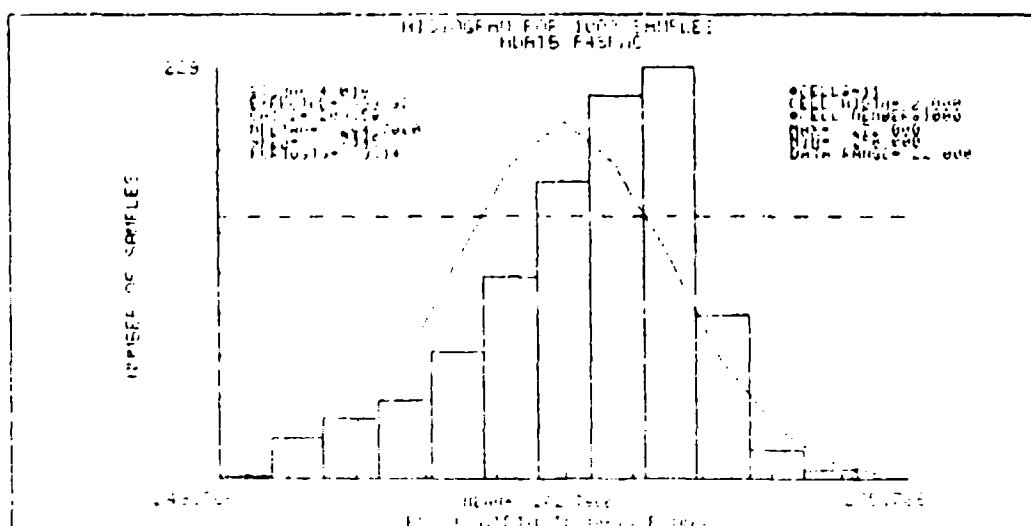
IF N1= 21 CW= 1.04761904761905

IF N1= 23 CW= .956521739130435

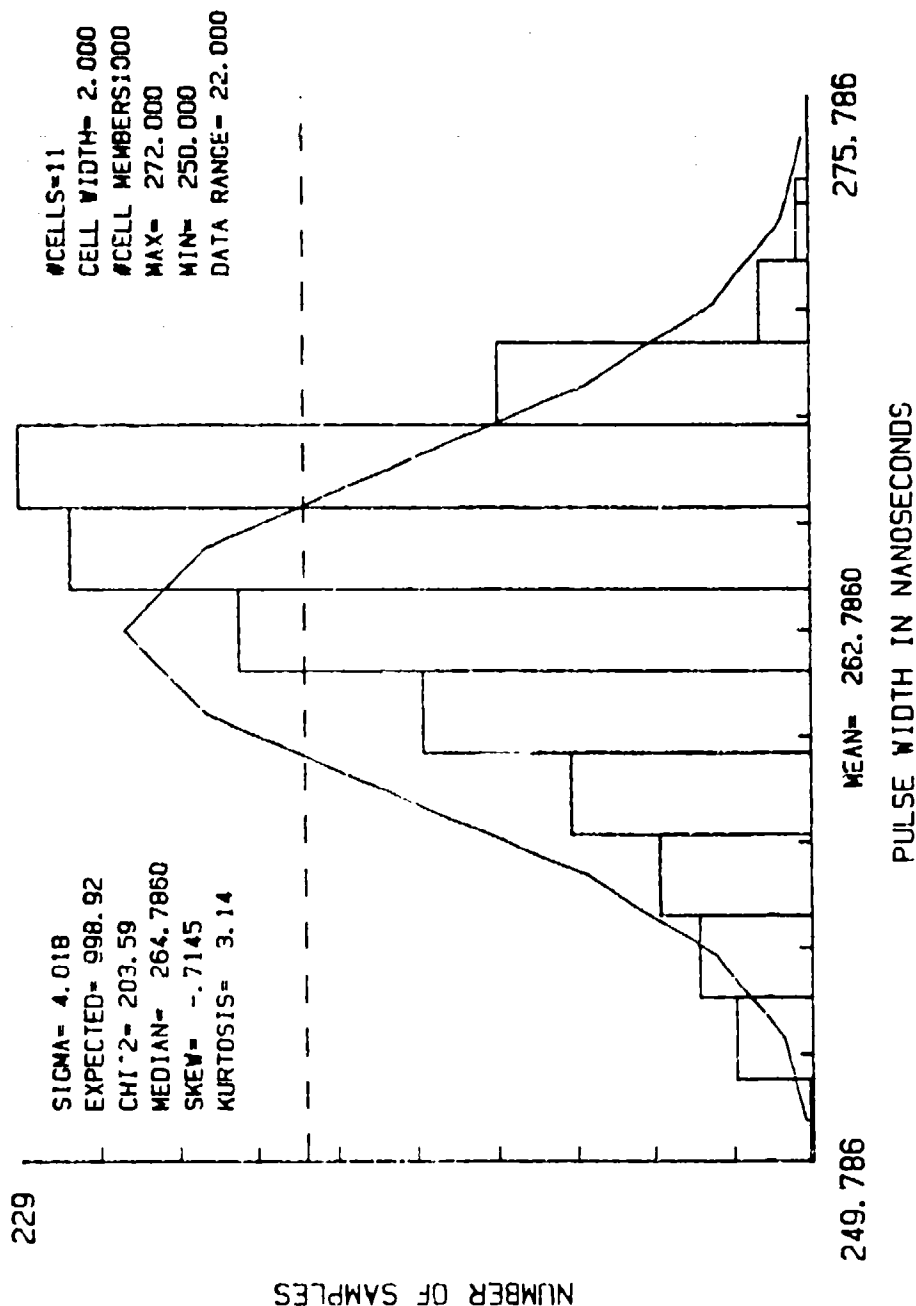
IF N1= 25 CW= .88

IF N1= 27 CW= .814814814814815

NPLOT EXECUTION TIME= 5.18MINUTES.



# HISTOGRAM FOR 1000 SAMPLES /HDATB/P4SPWC



FILE 780TEMP4SPWC

PLOT MIN= 249.7860 PLOT MAX= 275.7860  
 DATA MIN= 250.0000 DATA MAX= 272.0000

CELL #	CENTER	# SAMPLES	EXPECTED
1	250.7860	1	2.298
2	252.7860	22	8.975
3	254.7860	33	27.364
4	256.7860	44	65.125
5	258.7860	70	120.983
6	260.7860	112	175.432
7	262.7860	165	198.566
8	264.7860	214	175.432
9	266.7860	229	120.983
10	268.7860	91	65.125
11	270.7860	15	27.364
12	272.7860	4	8.975
13	274.7860	0	2.298

MEAN VALUE= 262.7860  
 STANDARD DEVIATION= 4.0182  
 COEFF OF SKEWNESS= -.7145  
 COEFF OF KURTOSIS= 3.1438  
 CHI-SQUARED= 203.5859  
 MEDIAN X VALUE= 264.7860  
 CELL WIDTH= 2.000000  
 PLOT RANGE= 26.0000  
 SUM ACTUAL= 1000  
 SUM EXPECTED= 998.9193

72.3PERCENT OF DATA LIES BETWEEN 260.7860 AND 266.7860

### Single Pulse Pulsewidth Sampled Data - P4SPWD

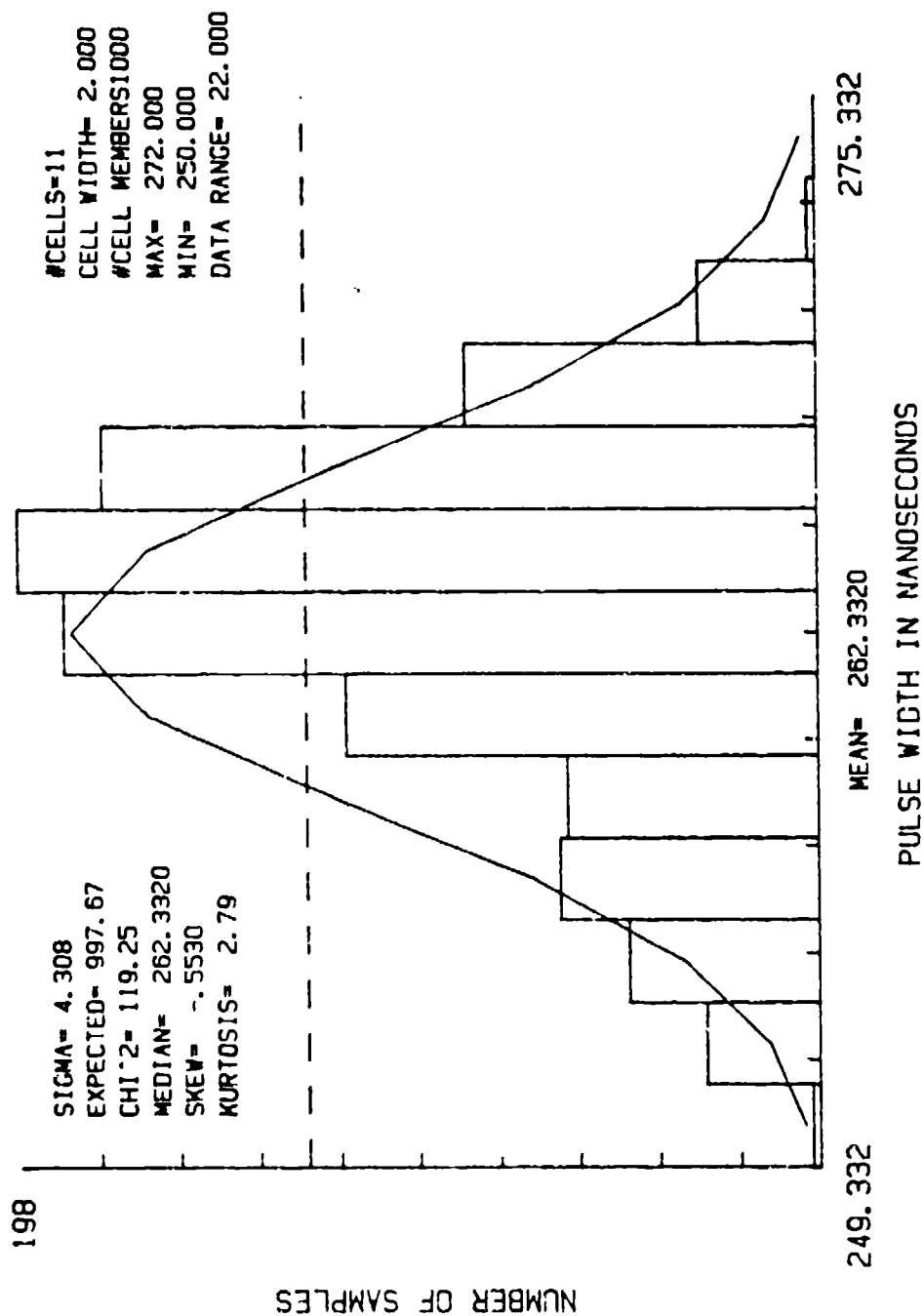
The statistical results of the single pulse pulsewidth sampled data P4SPWD are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.





# HISTOGRAM FOR 1000 SAMPLES /HDAT8/P4SPWD



FILE ZH0010.P4SPWD

PLOT MIN= 249.3320 PLOT MAX= 275.3320  
DATA MIN= 250.0000 DATA MAX= 272.0000

CELL #	CENTER	# SAMPLES	EXPECTED
1	250.3320	2	3.828
2	252.3320	28	12.525
3	254.3320	47	33.031
4	256.3320	64	70.223
5	258.3320	62	120.352
6	260.3320	117	166.278
7	262.3320	187	185.195
8	264.3320	198	166.278
9	266.3320	177	120.352
10	268.3320	67	70.223
11	270.3320	29	33.031
12	272.3320	2	12.525
13	274.3320	0	3.828

MEAN VALUE= 262.3320  
STANDARD DEVIATION= 4.3083  
COEFF OF SKEWNESS= -.9530  
COEFF OF KURTOSIS= 2.7096  
CHI-SQUARED= 119.2548  
MEDIAN X VALUE= 262.3320  
CELL WIDTH= 2.000000  
PLOT RANGE=26.0000  
SUM ACTUAL=1000  
SUM EXPECTED= 997.6697

68.0PERCENT OF DATA LIES BETWEEN 260.3320 AND 266.3320

## APPENDIX D

### INTRODUCTION

ELINT parameter test results are contained in this appendix for the PRI parameter associated with the HOOD radar. These measurements were performed with the Microwave Counter. The single pulse PRI data sets are labelled:

P4SRRA

P4SRRB

P4SRRC

P4SRRD

#### Single Pulse PRI Sampled Data - P4SRRA

The statistical results of the single pulse PRI sampled data P4SRRA are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this PRI data set.

FILENAME/HOATB/P45RRA

START TIME IS16:35:4485/09/07

MEAN= 222.1802

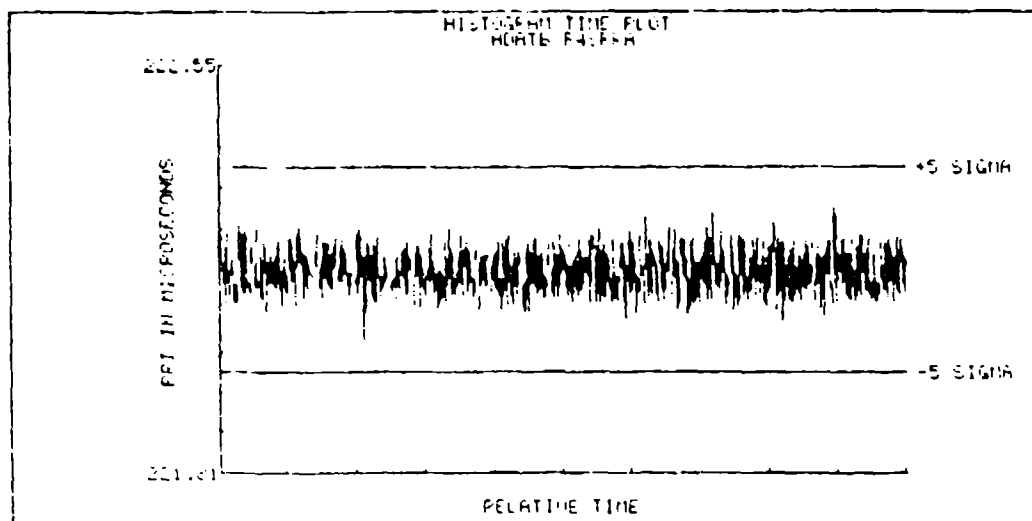
MAX VALUE= 222.2920 MIN VALUE= 222.0540 RANGE= .24

SIGMA= .0371

COEFFICIENT OF SKEWNESS= -.0271

COEFFICIENT OF KURTOSIS= 2.2472

OUT-OF-RANGE DATA POINTS= 0 POINTS



IF NI= 5 CW= .04759999999999999

IF NI= 7 CW= .03399999999999999

IF NI= 9 CW= .02644444444444444

IF NI= 11 CW= .02163636363636363

IF NI= 13 CW= .0183076923076923

IF NI= 15 CW= .01500666666666666

IF NI= 17 CW= .014

IF NI= 19 CW= .0125263157894737

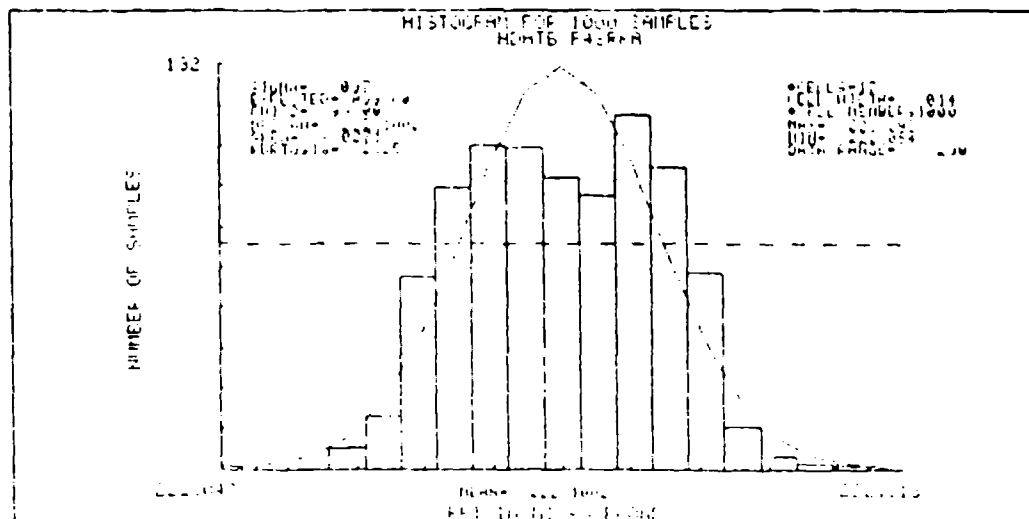
IF NI= 21 CW= .01133333333333333

IF NI= 23 CW= .0103478260869565

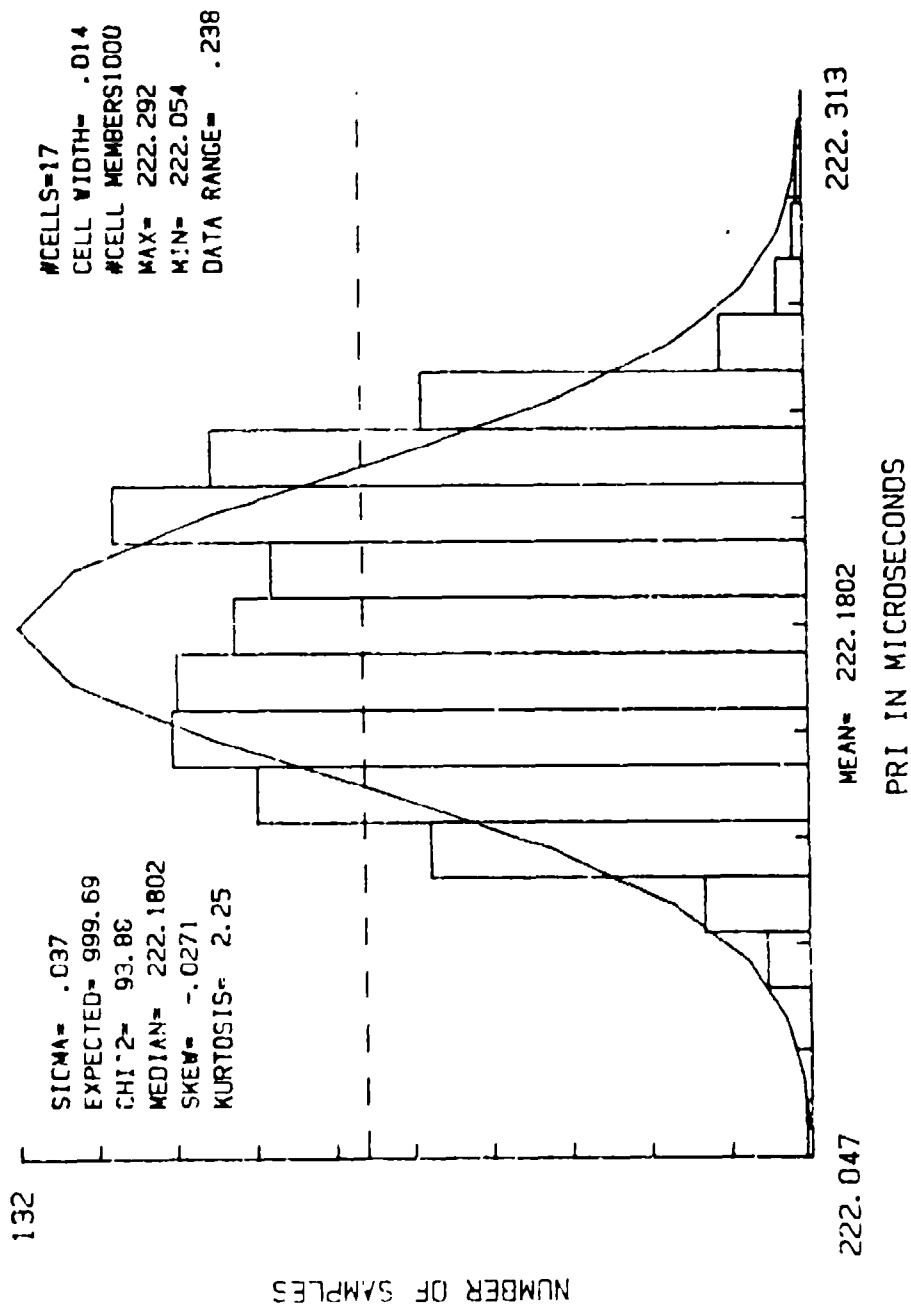
IF NI= 25 CW= .00951999999999999

IF NI= 27 CW= .0088148148148148

HPLLOT EXECUTION TIME= 7.40MINUTES.



# HISTOGRAM FOR 1000 SAMPLES /HDATB/P4SRRR



FILE /HDATA/P4SRRA

PLOT MIN= 222.0472 PLOT MAX= 222.3132  
 DATA MIN= 222.0540 DATA MAX= 222.2920

CFLI #	CENTER	# SAMPLES	EXPECTED
1	222.0542	1	.475
2	222.0682	0	1.591
3	222.0822	0	4.620
4	222.0962	8	11.640
5	222.1102	20	25.441
6	222.1242	72	48.237
7	222.1382	105	79.336
8	222.1522	121	113.194
9	222.1662	120	140.099
10	222.1802	109	150.420
11	222.1942	102	140.099
12	222.2082	132	113.194
13	222.2222	113	79.336
14	222.2362	73	48.237
15	222.2502	16	25.441
16	222.2642	5	11.640
17	222.2782	2	4.620
18	222.2922	1	1.591
19	222.3062	0	.475

MEAN VALUE= 222.1802  
 STANDARD DEVIATION= .0371  
 COEFF OF SKEWNESS= -.0271  
 COEFF OF KURTOSIS= 2.2472  
 CHI-SQUARED= 93.8837  
 MEDIAN X VALUE= 222.1802  
 CELL WIDTH= .014000  
 PLOT RANGE= .2660  
 SUM ACTUAL=1000  
 SUM EXPECTED= 999.6856

58.5PERCENT OF DATA LIES BETWEEN 222.1522 AND 222.2082

#### Single Pulse PRI Sampled Data - P4SRRB

The statistical results of the single pulse PRI sampled data P4SRRB are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this PRI data set.



START TIME IS 16:47:2185/09/07

MEAN= 222.1868

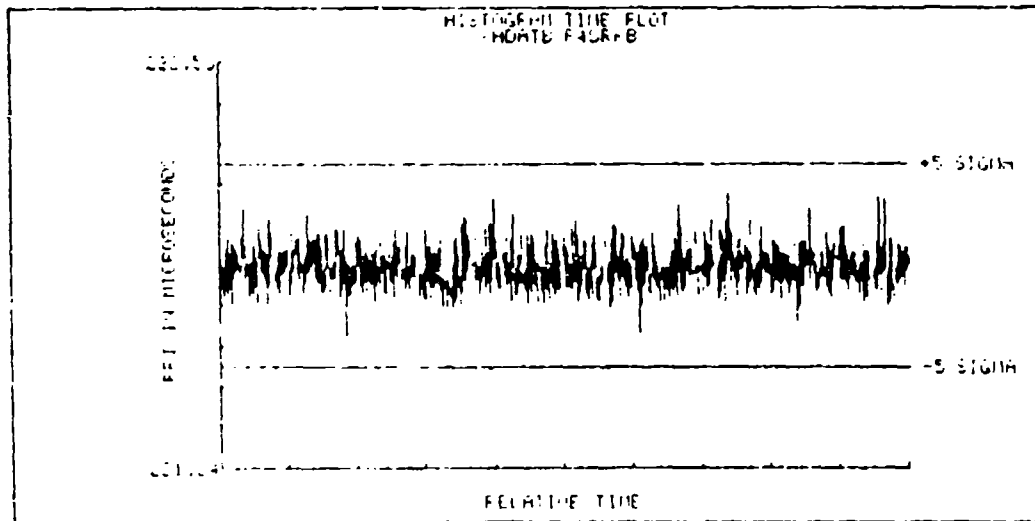
MAX VALUE= 222.3120 MIN VALUE= 222.0680 RANGE= .24

SIGMA= .0346

COEFFICIENT OF SKEWNESS= 1.2102

COEFFICIENT OF KURTOSIS= 2.9882

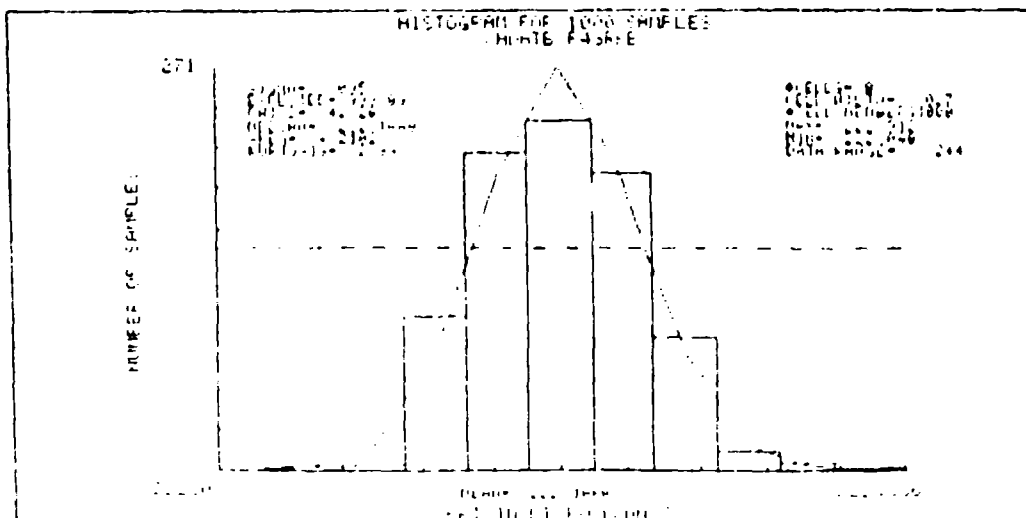
OUT-OF-RANGE DATA POINTS= 0 POINTS



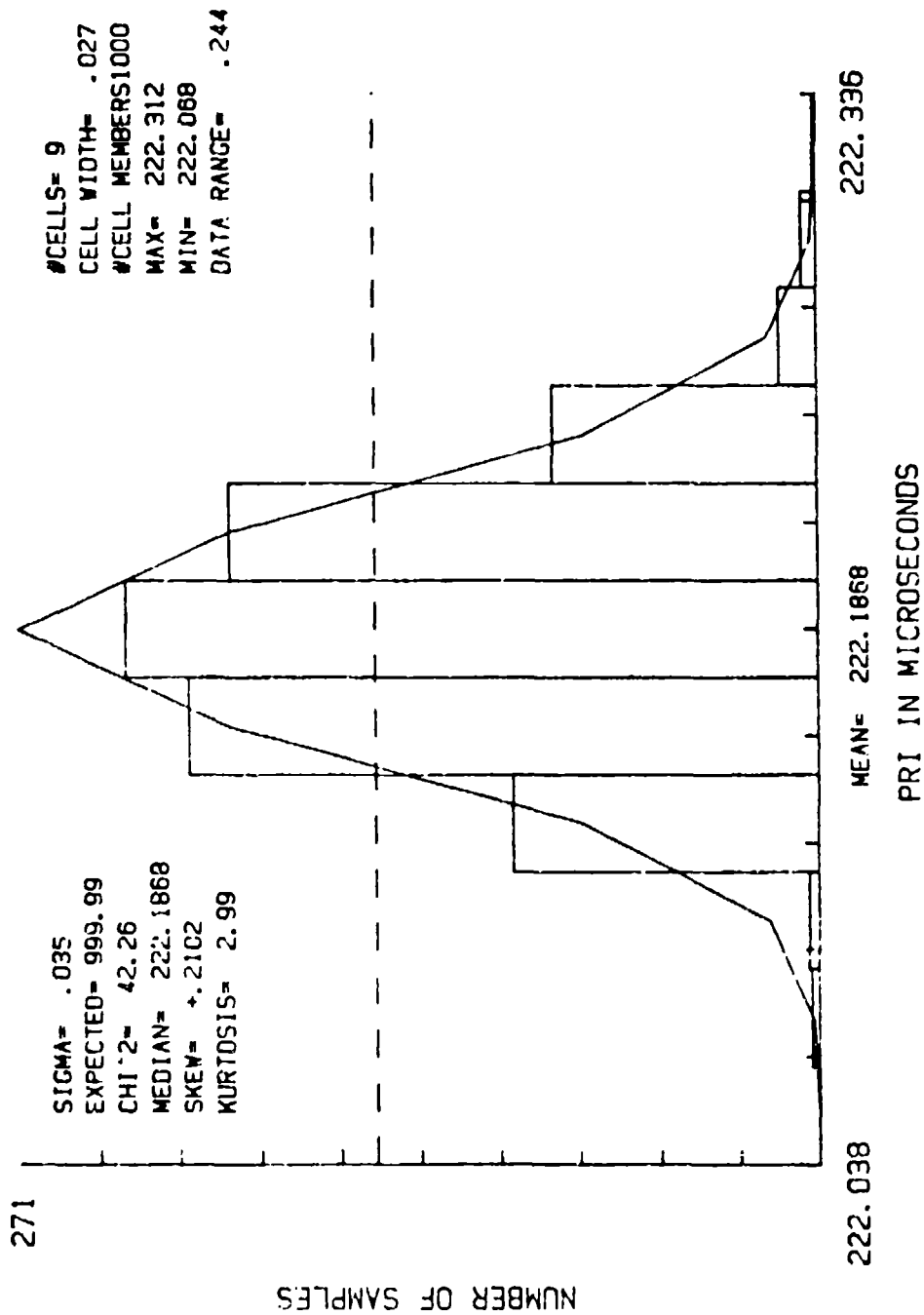
```

IF NI= 5 CW= .0488
IF NI= 7 CW= .0348571428571428
IF NI= 9 CW= .0271111111111111
IF NI= 11 CW= .0221818181818181
IF NI= 13 CW= .0187692307692308
IF NI= 15 CW= .0162666666666667
IF NI= 17 CW= .0143529411764706
IF NI= 19 CW= .0128421052631579
IF NI= 21 CW= .0116190476190476
IF NI= 23 CW= .0106086956521739
IF NI= 25 CW= .00975999999999999
IF NI= 27 CW= .00903703703703703
HPLOT EXECUTION TIME= 5.75MINUTES.

```



# HISTOGRAM FOR 1000 SAMPLES /HDATA/P4SRRB



FILE /H0ATB/P4SRRB

PLOT MIN= 222.0377 PLOT MAX= 222.3359  
DATA MIN= 222.0680 DATA MAX= 222.3120

CELL #	CENTER	# SAMPLES	EXPECTED
1	222.0512	0	.145
2	222.0783	3	2.296
3	222.1054	4	19.707
4	222.1326	120	91.526
5	222.1597	246	229.986
6	222.1868	271	312.671
7	222.2139	230	229.986
8	222.2410	104	91.526
9	222.2681	15	19.707
10	222.2952	6	2.296
11	222.3223	1	.145

MEAN VALUE= 222.1868

STANDARD DEVIATION= .0346

COEFF OF SKEWNESS= +.2102

COEFF OF KURTOSIS= 2.9882

CHI-SQUARED= 42.2638

MEDIAN X VALUE= 222.1868

CELL WIDTH= .027111

PLOT RANGE= .2982

SUM ACTUAL= 1000

SUM EXPECTED= 999.9899

75.2PERCENT OF DATA LIES BETWEEN 222.1597 AND 222.2139

#### Single Pulse PRI Sampled Data - P4SRRC

The statistical results of the single pulse PRI sampled data P4SRRC are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this PRI data set.

FILENAME/HOATB/P45RRC

START TIME 1517:05:5085/09/07

MEAN= 222.1864

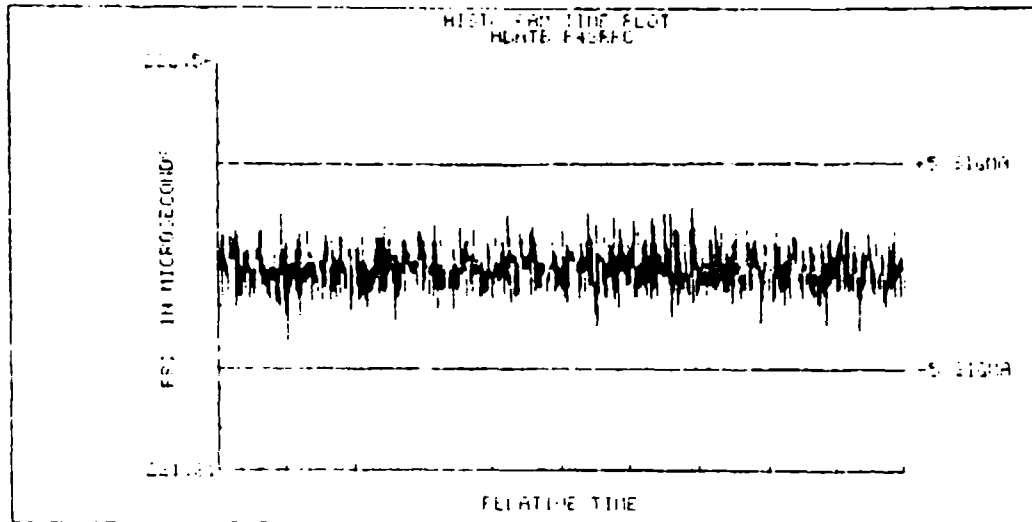
MAX VALUE= 222.2980 MIN VALUE= 222.0500 RANGE= .25

SIGMA= .0378

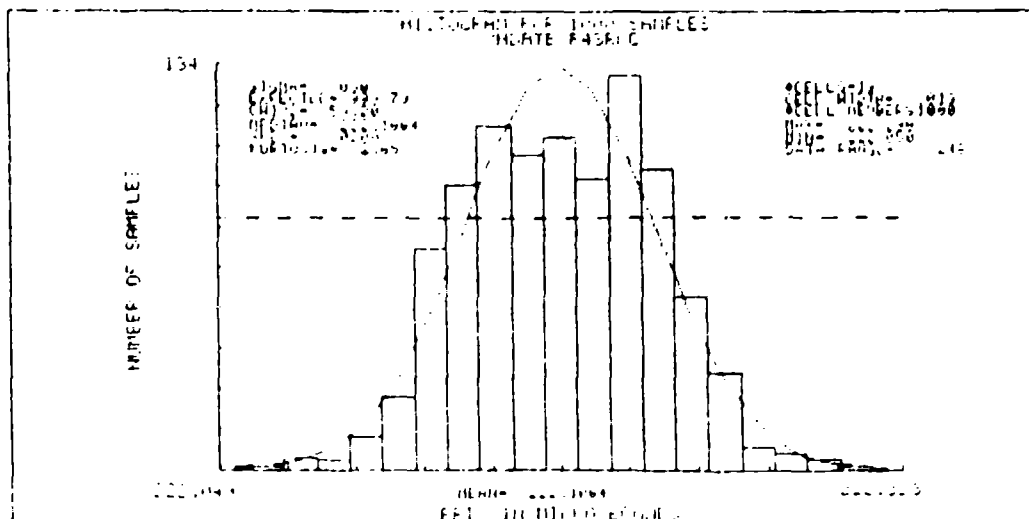
COEFFICIENT OF SKEWNESS= -.0200

COEFFICIENT OF KURTOSIS= 2.6550

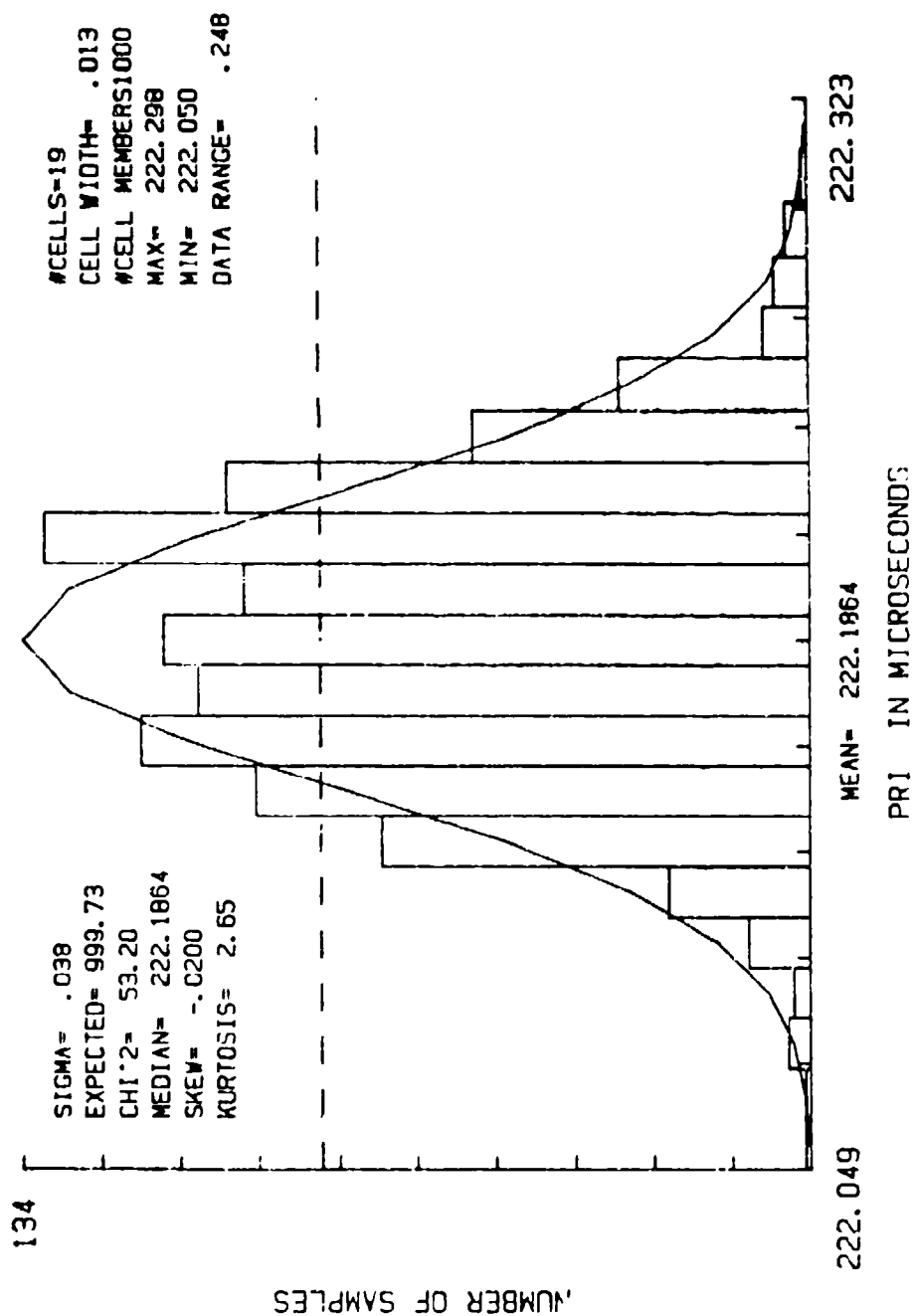
OUT-OF-RANGE DATA POINTS= 0 POINTS



IF NI= 5 CW= .04960000000000038  
 IF NI= 7 CW= .0354205714285741  
 IF NI= 9 CW= .0275555555555577  
 IF NI= 11 CW= .0225454545454563  
 IF NI= 13 CW= .0190769230769245  
 IF NI= 15 CW= .0165333333333346  
 IF NI= 17 CW= .0145082352941108  
 IF NI= 19 CW= .0130526315789484  
 IF NI= 21 CW= .0110095238095247  
 IF NI= 23 CW= .01070260695053  
 IF NI= 25 CW= .00992000000000075  
 IF NI= 27 CW= .00918518518518500  
 HPLLOT EXECUTION TIME= 7.40MINUTES,



# HISTOGRAM FOR 1000 SAMPLES /HDATB/P4SRRC



FILE /HQB/B/P4SRRC

PLOT MIN= 222.0493 PLOT MAX= 222.3234  
DATA MIN= 222.0500 DATA MAX= 222.2980

CELL #	CENTER	# SAMPLES	EXPECTED
1	222.0559	1	.357
2	222.0689	1	1.107
3	222.0820	4	3.046
4	222.0950	3	7.441
5	222.1081	11	16.137
6	222.1211	25	31.068
7	222.1342	75	53.097
8	222.1472	97	80.557
9	222.1603	117	108.497
10	222.1733	107	129.719
11	222.1864	113	137.679
12	222.1994	99	125.719
13	222.2125	134	108.497
14	222.2255	107	80.557
15	222.2386	59	53.097
16	222.2516	33	31.068
17	222.2647	8	16.137
18	222.2777	6	7.441
19	222.2908	4	3.046
20	222.3039	1	1.107
21	222.3169	0	.357

MEAN VALUE= 222.1864  
STANDARD DEVIATION= .0378  
COEFF OF SKEWNESS= -.0200  
COEFF OF KURTOSIS= 2.6550  
CHI-SQUARED= 53.2003  
MEDIAN X VALUE= 222.1864  
CELL WIDTH= .013053  
PLOT RANGE= .2741  
SUM ACTUAL=1000  
SUM EXPECTED= 999.7290

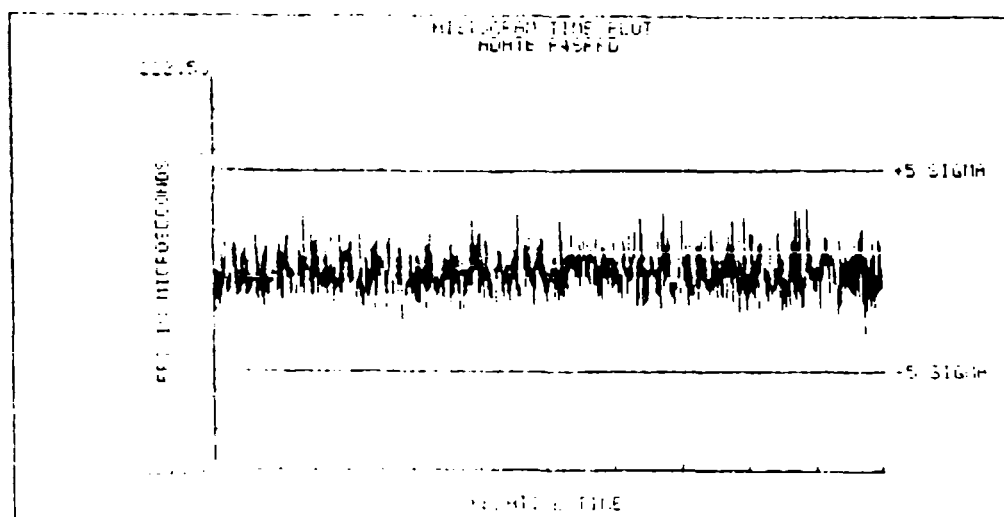
57.1 PERCENT OF DATA LIES BETWEEN 222.1603 AND 222.2125

### Single Pulse PRI Sampled Data - P4SRRD

The statistical results of the single pulse PRI sampled data P4SRRD are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

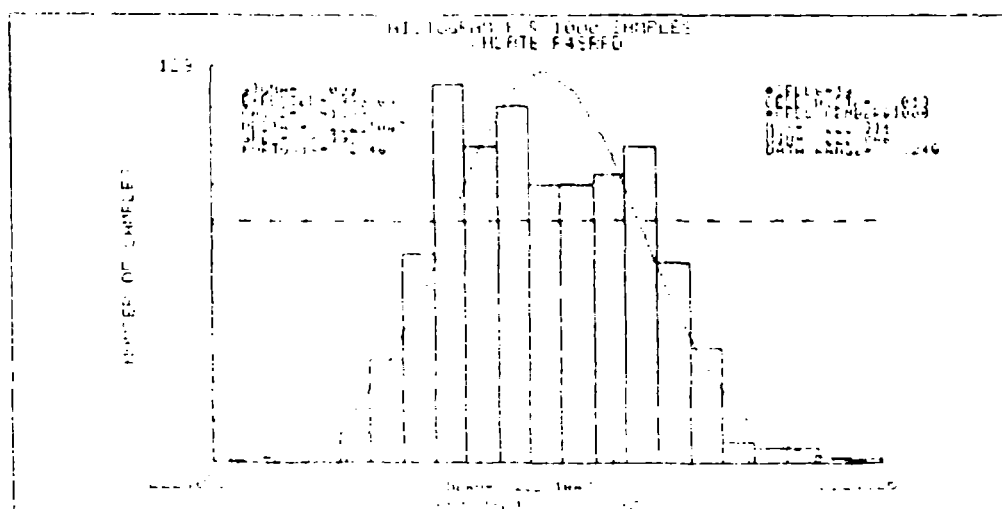
The test results section of this report contains summary statistical information associated with this PRI data set.



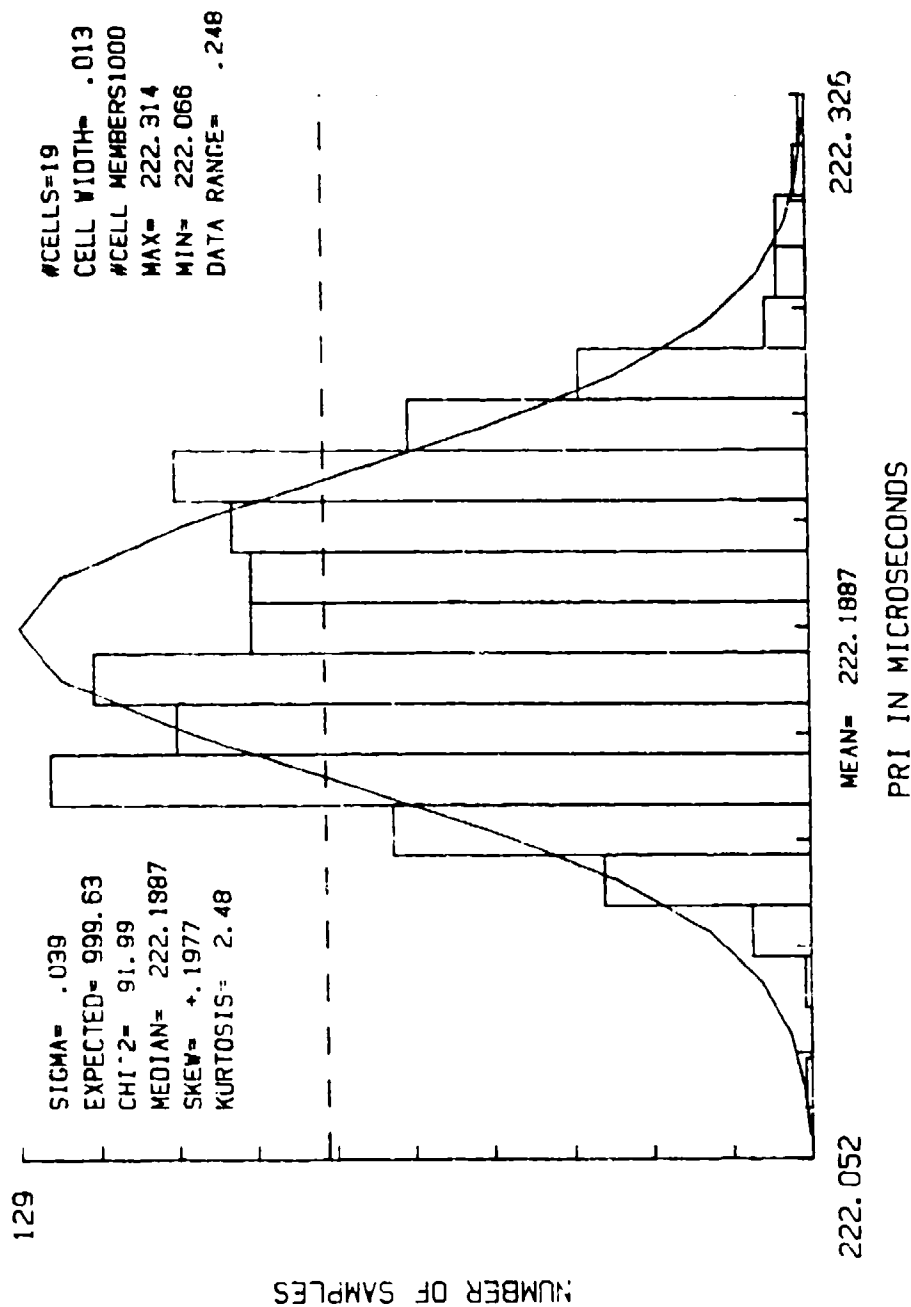
[illegible]

IF	NI=	5	CW=	.04945999999999981
IF	NI=	7	CW=	.0354285714285721
IF	NI=	9	CW=	.02755555555555545
IF	NI=	11	CW=	.0221454545454537
IF	NI=	13	CW=	.0190769230769223
IF	NI=	15	CW=	.01653333333333277
IF	NI=	17	CW=	.0145887352941171
IF	NI=	19	CW=	.0130526315789459
IF	NI=	21	CW=	.0118095238095234
IF	NI=	23	CW=	.0107826086956518
IF	NI=	25	CW=	.00991999999999962
IF	NI=	27	CW=	.00918518518518403

FILED EXECUTION TIME = 0.43MINUTS.



# HISTOGRAM FOR 1000 SAMPLES /H0ATB/P4SRRO



FILE /HOATB/P4SRRO

PLOT MIN= 222.0516 PLOT MAX= 222.3257  
DATA MIN= 222.0560 DATA MAX= 222.3140

CELL #	CENTER	# SAMPLES	EXPECTED
1	222.0581	0	.455
2	222.0712	1	1.342
3	222.0842	0	3.530
4	222.0973	1	8.286
5	222.1103	10	17.358
6	222.1234	35	32.455
7	222.1364	71	54.155
8	222.1495	129	80.645
9	222.1626	108	107.180
10	222.1756	122	127.125
11	222.1887	95	134.567
12	222.2017	95	127.125
13	222.2148	98	107.180
14	222.2278	108	80.645
15	222.2409	68	54.155
16	222.2539	39	32.455
17	222.2670	7	17.358
18	222.2800	5	8.286
19	222.2931	5	3.530
20	222.3061	2	1.342
21	222.3192	1	.455

MEAN VALUE= 222.1887  
STANDARD DEVIATION= .0387  
COEFF OF SKEWNESS= +.1977  
COEFF OF KURTOSIS= 2.4798  
CHI-SQUARED= 91.9906  
MEDIAN X VALUE= 222.1887  
CELL WIDTH= .013053  
PLOT RANGE= .2741  
SUM ACTUAL=1000  
SUM EXPECTED= 999.6270

52.0PERCENT OF DATA LIES BETWEEN 222.1626 AND 222.2148

## APPENDIX E

### INTRODUCTION

ELINT parameter test results are contained in this appendix for the **averaged frequency parameter** associated with the HOOD radar. These measurements were performed with the Microwave Counter. The single pulse frequency data sets are labelled:

P4RFA

P4RFB

P4RFC

P4RFD

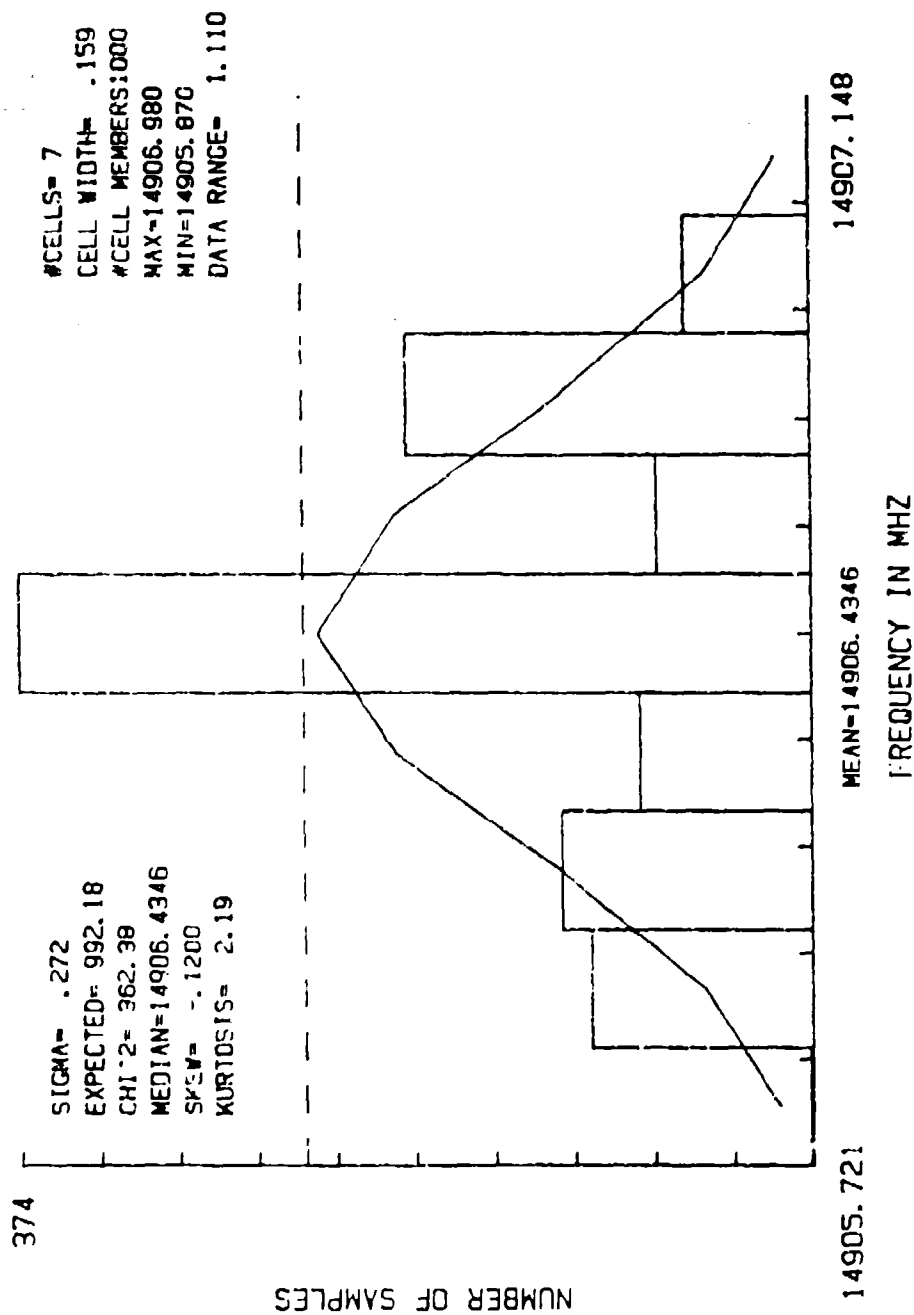
#### Average Frequency Sampled Data - P4RFA

The statistical results of the frequency sampled data P4RFA are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this frequency data set.



# HISTOGRAM FOR 1000 SAMPLES /HDATA/P4RFA



FILE /HDATA/P4RFA

PLOT MIN=14905.7210 PLOT MAX=14907.1482  
DATA MIN=14905.8700 DATA MAX=14906.9000

CELL #	CENTER	# SAMPLES	EXPECTED
1	14905.8003	1	15.366
2	14905.9589	104	50.436
3	14906.1174	118	117.876
4	14906.2760	81	196.174
5	14906.4346	374	232.476
6	14906.5932	73	196.174
7	14906.7517	190	117.876
8	14906.9103	59	50.436
9	14907.0689	0	15.366

MEAN VALUE=14906.4346  
STANDARD DEVIATION= .2721  
COEFF OF SKEWNESS= -.1200  
COEFF OF KURTOSIS= 2.1872  
CHI-SQUARED= 362.3809  
MEDIAN X VALUE=14906.4346  
CELL WIDTH= .158571  
PLOT RANGE= 1.4271  
SUM ACTUAL=1000  
SUM EXPECTED= 992.1798

56.1 PERCENT OF DATA LIES BETWEEN 14906.2760 AND 14906.5932



#### Average Frequency Sampled Data - P4RFB

The statistical results of the frequency sampled data P4RFB are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this frequency data set.

PM 104-15611-100180

BOOK VALUE: \$641.94

PH 6611 - Nov 1, 1950

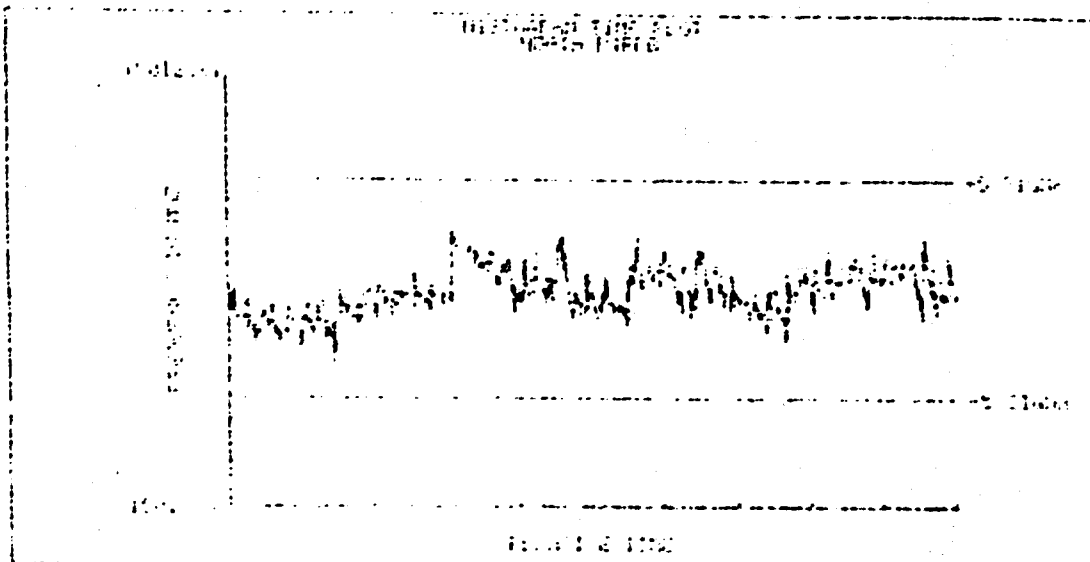
Revised:

**• ઉધ**

CONFIDENTIAL OF SERVICE: 55- -0193

COEFFICIENT OF KURTOSIS= 2.6854

OUT-01 - KERALA DATA POINTS: 0 POINTS



1f 10 9 CO- .270.650.44 6472 33

If this is a CD .602 77 7272 727319

11-11-13 CW .65307017 30729073

TF 11-15 01-2012-0002-0034

REF ID: A76004

IF 01- 13 CU- 003515- 017-011

11- 011- 21 CU - 63205-21408571071

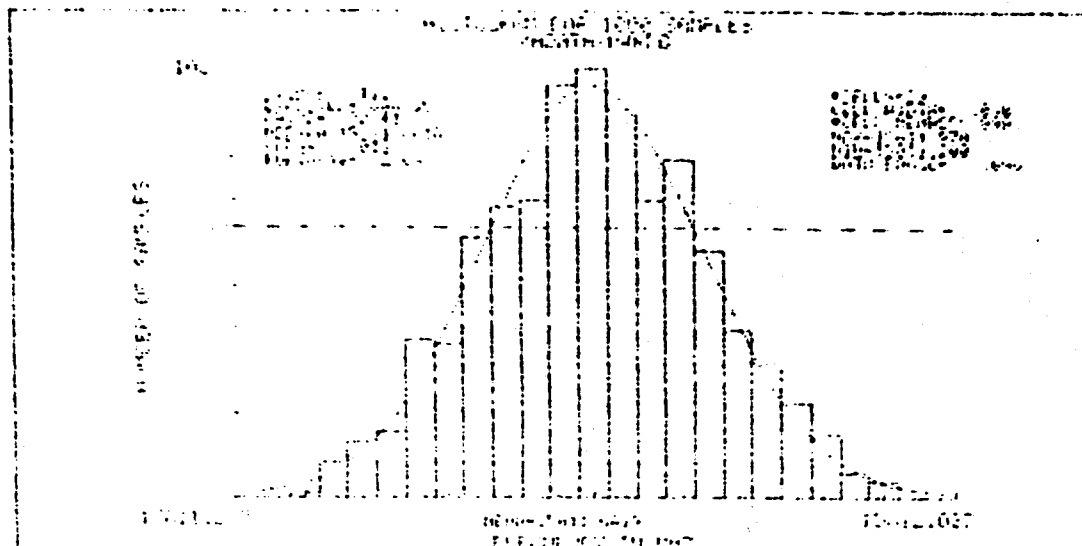
11-11-73 CH: 000-000-000001

II III = 75. CH = 0.87116-0.937-0.93039

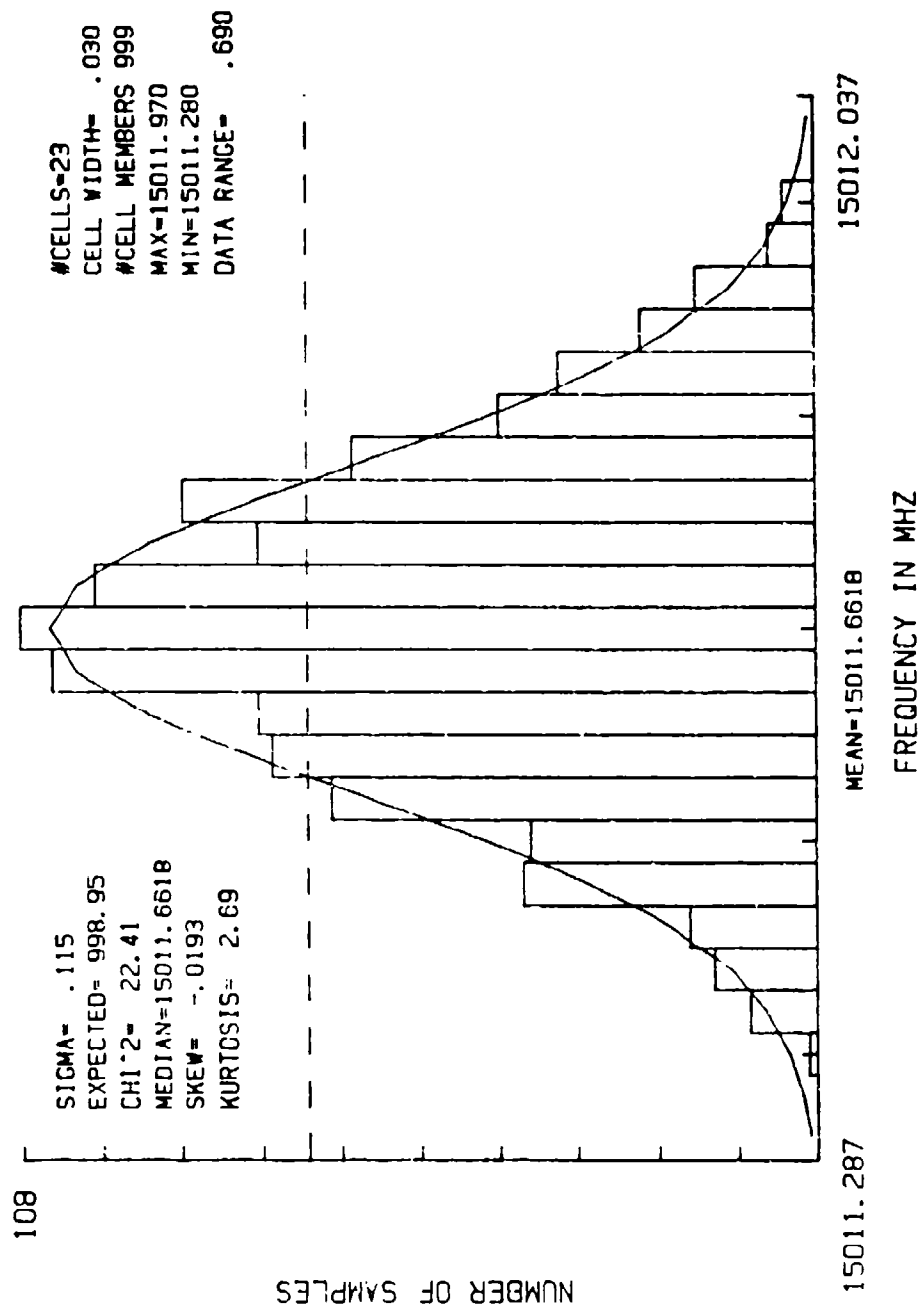
11	111	77	CH	07/05/2011	00000781
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161 OF EXCUTION TIME - 7.53 MINUTS.

**Best Available Copy**



# HISTOGRAM FOR 1000 SAMPLES /HDATA/P4RFB



# FILE ZIBOTR/PARED

PLOT MIN=15011.2888 PLOT MAX=15012.0358  
DATA MIN=15011.2000 DATA MAX=15011.9700

CELL #	CENTER	# SAMPLES	EXPECTED
1	15011.3018	0	.763
2	15011.3318	0	1.674
3	15011.3618	1	3.429
4	15011.3918	9	6.560
5	15011.4218	14	11.723
6	15011.4518	17	19.564
7	15011.4818	40	30.496
8	15011.5118	39	44.398
9	15011.5418	66	60.370
10	15011.5718	71	76.671
11	15011.6018	76	90.944
12	15011.6318	104	100.754
13	15011.6618	100	104.254
14	15011.6918	98	100.754
15	15011.7218	76	90.944
16	15011.7518	88	76.671
17	15011.7818	63	60.370
18	15011.8118	43	44.398
19	15011.8418	35	30.496
20	15011.8718	24	19.564
21	15011.9018	16	11.723
22	15011.9318	6	6.560
23	15011.9618	4	3.429
24	15011.9918	0	1.674
25	15012.0218	0	.763

MEAN VALUE=15011.6618  
STANDARD DEVIATION= .1148  
COEFF OF SKEWNESS= -.0193  
COEFF OF KURTOSIS= 2.0954  
CHI-SQUARED= 22.4114  
MEDIAN X VALUE=15011.6618  
CELL WIDTH= .030000  
PLOT RANGE= .7500  
SUM ACTUAL= 999  
SUM EXPECTED= 998.9466

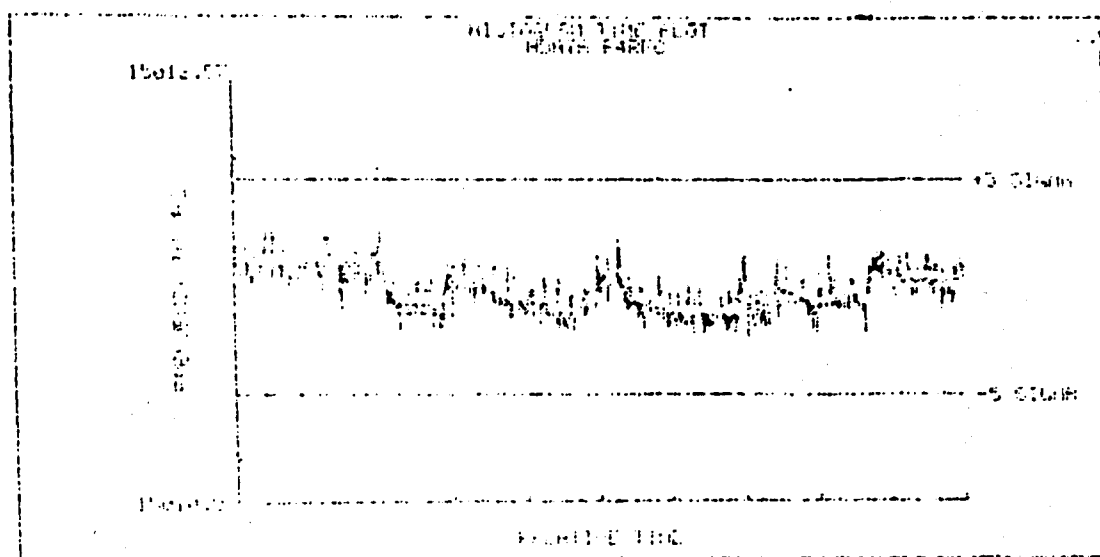
62.3-PERCENT OF DATA LIES BETWEEN 15011.5718 AND 15011.7518

#### Average Frequency Sampled Data - P4RFC

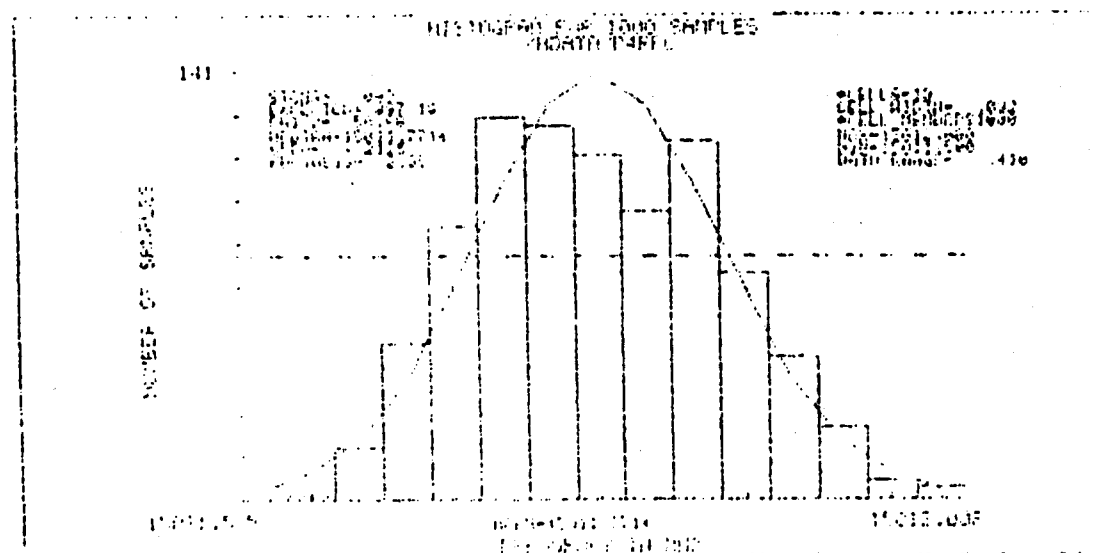
The statistical results of the frequency sampled data P4RFC are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this frequency data set.

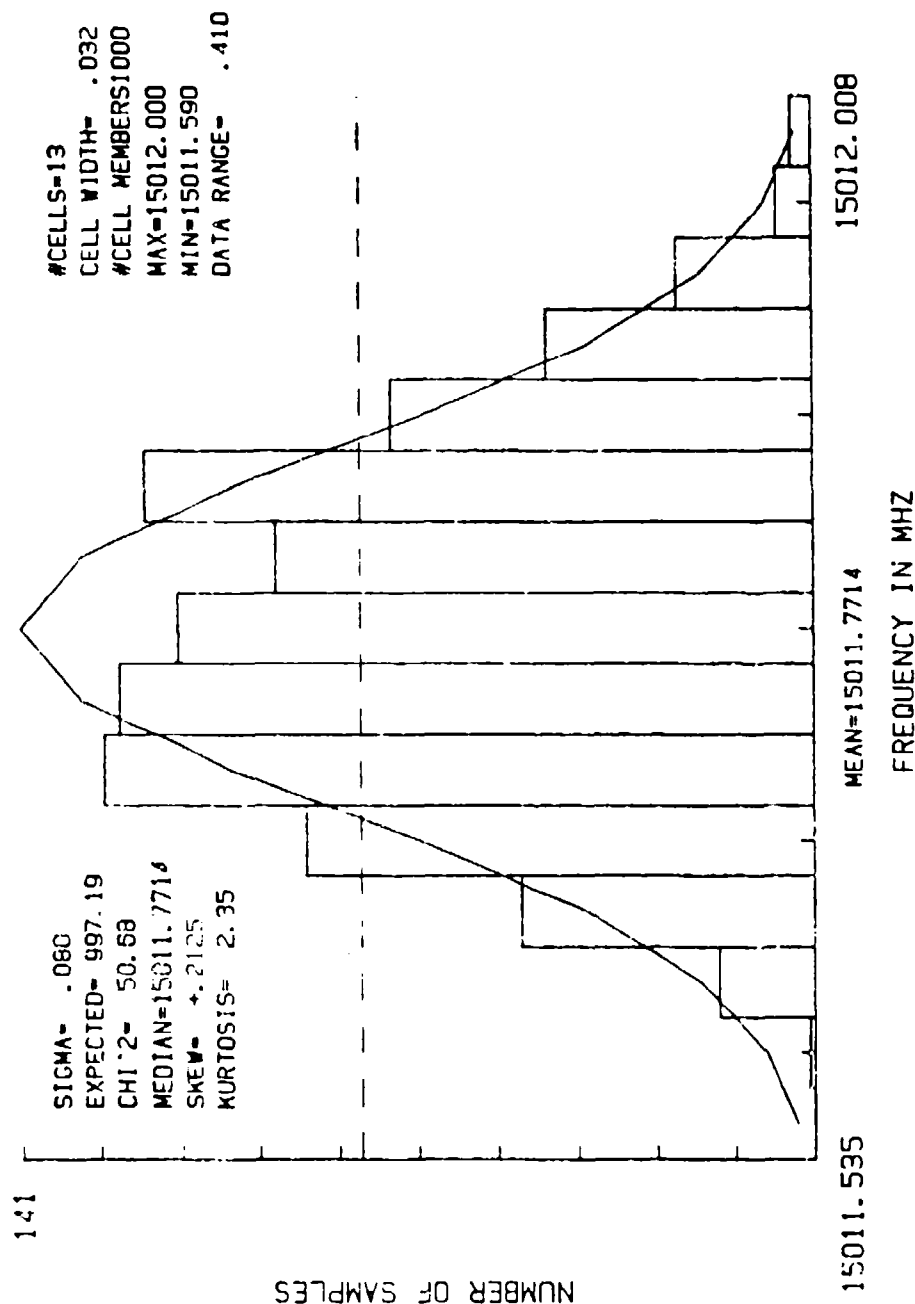
FILENAME: NORTH.P4R (S) DATE TIME: 1501:29:1005/03/23  
 MEAN: 15011.7714  
 MAX VALUE: 15012.0000 MIN VALUE: 15011.5000 RANGE: .41  
 SIGMA: .0797  
 COEFFICIENT OF SKEWNESS: 4.2125  
 COEFFICIENT OF KURTOSIS: 2.3533  
 OUT-OF-RANGE DATA POINTS: 0 POINTS



IF N1= 9 CM= .0455570333333333  
 IF N1= 11 CM= .0372727272727273  
 IF N1= 13 CM= .0315304015304015  
 IF N1= 15 CM= .0273333333333333  
 IF N1= 17 CM= .0241176470588235  
 IF N1= 19 CM= .0215765473684104  
 IF N1= 21 CM= .0195736263736264  
 IF N1= 23 CM= .0178260869565217  
 IF N1= 25 CM= .0163999999999999  
 IF N1= 27 CM= .0151851851851852  
 HISTOGRAM EXECUTION TIME= 8.37HOURS.



# HISTOGRAM FOR 1000 SAMPLES /HDATA/P4RFC



# CELL ZIRCONIUM

PLOT MIN=15011.5349 PLOT MAX=15012.5280  
DATA MIN=15011.5503 DATA MAX=15012.0300

CELL #	CENTER	# SAMPLES	EXPECTED
1	15011.5507	0	3.401
2	15011.5822	1	9.414
3	15011.6138	19	27.283
4	15011.6453	50	45.034
5	15011.6768	101	78.074
6	15011.7084	141	115.428
7	15011.7399	138	146.003
8	15011.7714	127	157.698
9	15011.8030	107	146.003
10	15011.8345	133	115.428
11	15011.8661	84	78.074
12	15011.8976	53	45.034
13	15011.9291	27	27.283
14	15011.9607	7	9.414
15	15011.9922	4	3.401

MEAN VALUE=15011.7714

STANDARD DEVIATION= .6757

Coeff OF SKWENESS= 1.2125

Coeff OF KURTOSIS= 2.3533

CRD SQUARED= 52.6761

MEDIAN X VALUE=15011.7714

CELL WIDTH= .031539

PLOT RANGE= .4731

SUM ACTUAL=1030

SUM EXPECTED= 957.1906

95.3PERCENT OF DATA LIES BETWEEN 15011.7084 AND 15011.8345



#### Average Frequency Sampled Data - P4RFD

The statistical results of the frequency sampled data P4RFD are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this frequency data set.

FILE NAME/HDATA/P4RFD START TIME 1515:05:4985/09/14

MEAN=15011.7125

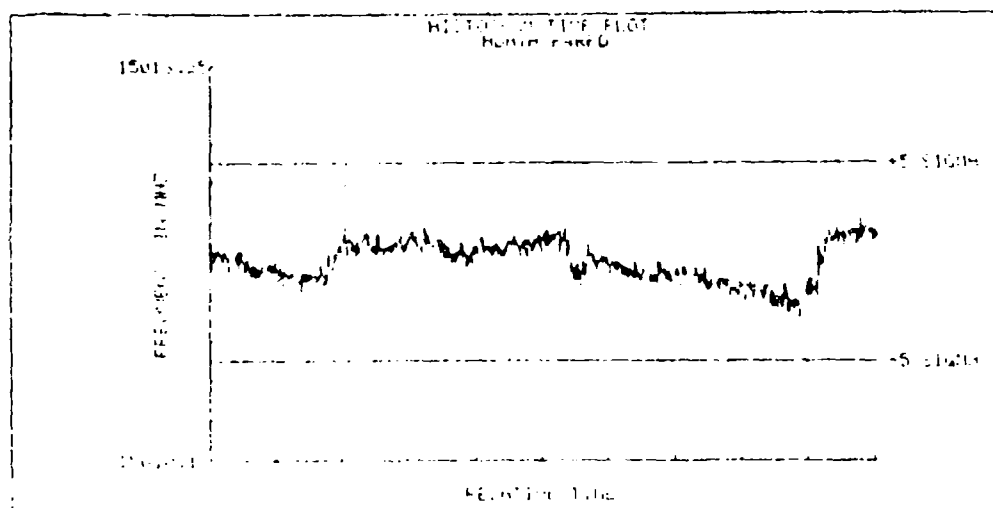
MAX VALUE=15012.0400 MIN VALUE=15011.2700 RANGE= .77

SIGMA= .1536

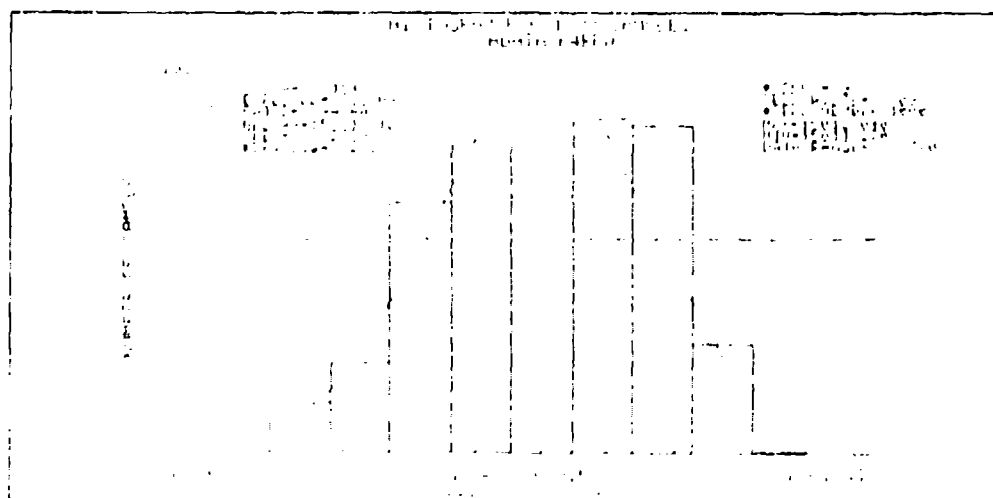
COEFFICIENT OF SKEWNESS= -.2700

COEFFICIENT OF KURTOSIS= 2.1697

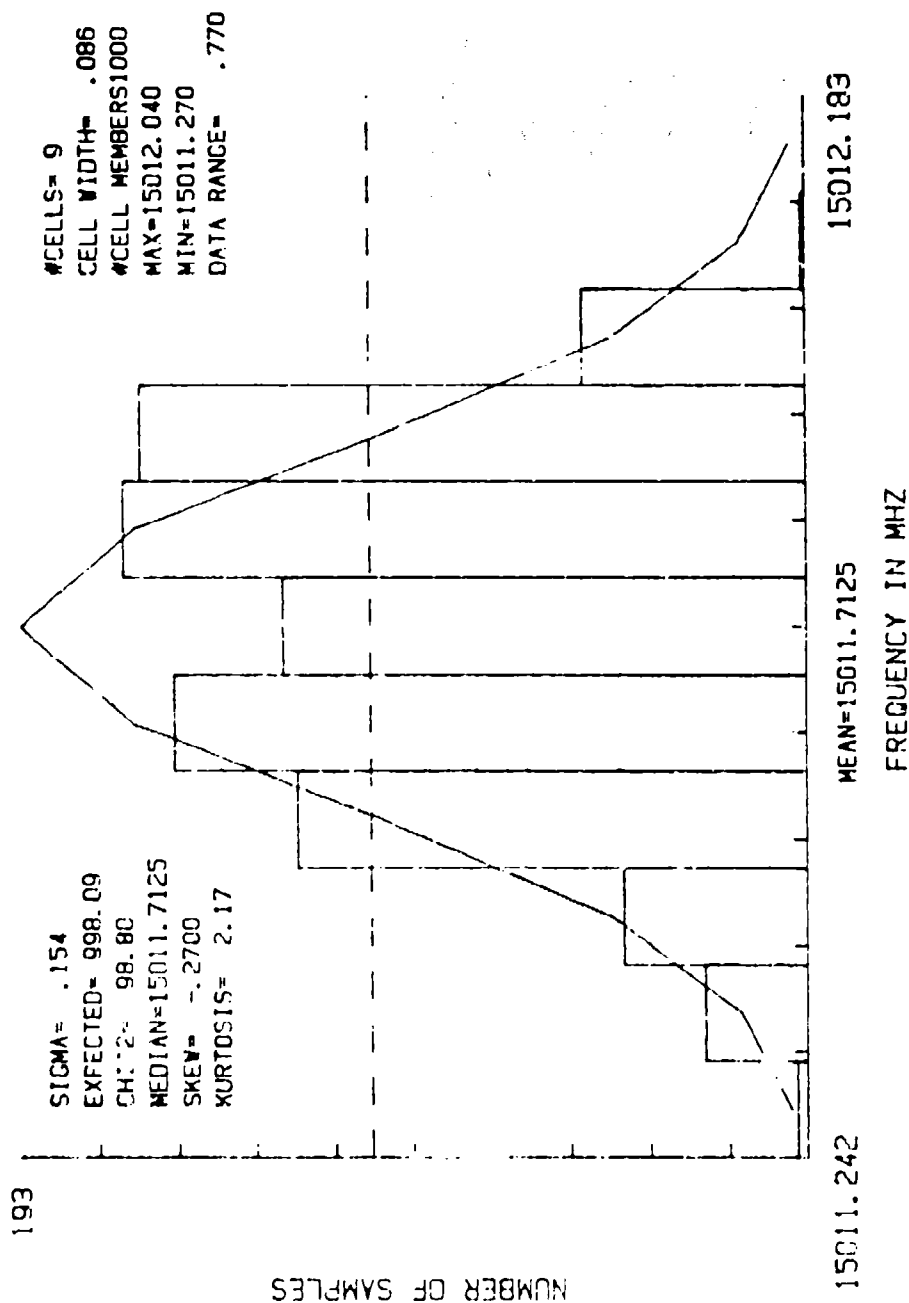
OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= .15420000000000007  
 IF N1= 7 CW= .11000000000000007  
 IF N1= 9 CW= .085500000000000041  
 IF N1= 11 CW= .0700000000000000397  
 IF N1= 13 CW= .05923070923000028  
 IF N1= 15 CW= .051333333333333674  
 IF N1= 17 CW= .0452941176470845  
 IF N1= 19 CW= .04020000000000007  
 IF N1= 21 CW= .0360000000000000875  
 IF N1= 23 CW= .03347021000095842  
 IF N1= 25 CW= .0300000000000000175  
 IF N1= 27 CW= .028510510510510347  
 END OF EXECUTION TIME= 5.22MINUTES.



# HISTOGRAM FOR 1000 SAMPLES /HDATA/P4RFD



FILE Z15DATA/P4RFD

DATA # PLOT MIN=15011.2419 PLOT MAX=15012.1831  
DATA MIN=15011.2700 DATA MAX=15012.0400

CELL #	CENTER	# SAMPLES	EXPECTED
1	15011.2847	3	4.595
2	15011.3703	29	18.565
3	15011.4558	52	55.000
4	15011.5414	144	119.475
5	15011.6269	179	190.293
6	15011.7125	148	222.232
7	15011.7981	193	190.293
8	15011.8836	188	119.475
9	15011.9692	63	55.000
10	15012.0547	1	18.565
11	15012.1403	0	4.595

MEAN VALUE=15011.7125  
STANDARD DEVIATION= .1536  
COEFF OF SKEWNESS= -.2700  
COEFF OF KURTOSIS= 2.1697  
CHI-SQUARE= 96.8020  
MEDIAN X VALUE=15011.7125  
CELL WIDTH= .065556  
PLOT RANGE= .9411  
SUM ACTUAL=1000  
SUM EXPECTED= 998.0873

70.9 PERCENT OF DATA LIES BETWEEN 15011.6269 AND 15011.8836

## APPENDIX F

### INTRODUCTION

ELINT parameter test results are contained in this appendix for the averaged pulsewidth parameter associated with the HOOD radar. These measurements were performed with the Microwave Counter sensor. The pulse data sets are labelled:

P3PWA

P3PWB

#### Average Pulsewidth Sampled Data - P3PWA

The statistical results of the average pulsewidth sampled data P3PWA are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.

FILE NAME: H10001.PSP

START TIME: 1975-27-26 05:05:14

MEAN= 224.0665

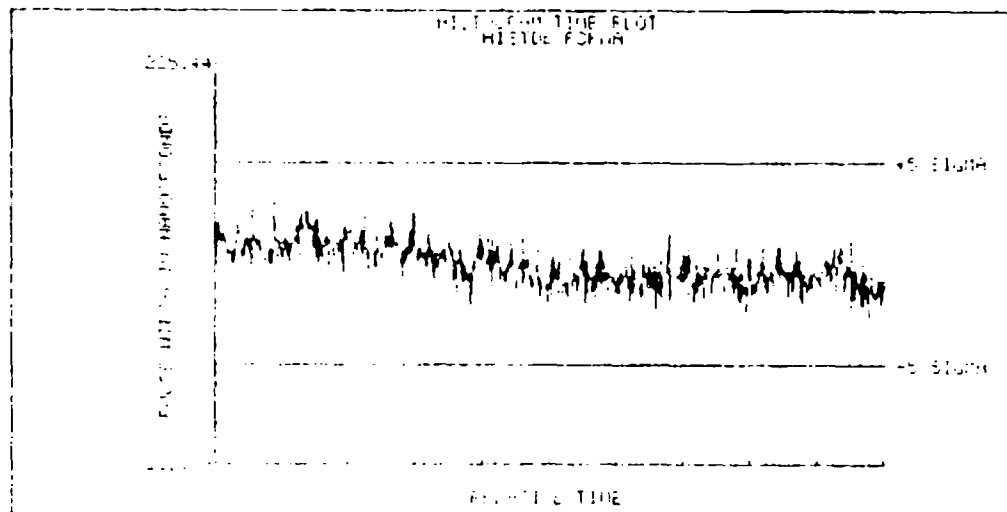
MAX VALUE= 224.5000 MIN VALUE= 223.7000 RANGE= .80

STANDARD= .1375

COEFFICIENT OF SKEWNESS= +.2025

COEFFICIENT OF KURTOSIS= 2.6755

OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= .15089599599997

IF N1= 7 CW= .114785714785717

IF N1= 9 CW= .238888888888889

IF N1= 11 CW= .077777777777777

IF N1= 13 CW= .061538461538462

IF N1= 15 CW= .053333333333333

IF N1= 17 CW= .047058823529412

IF N1= 19 CW= .041025641025641

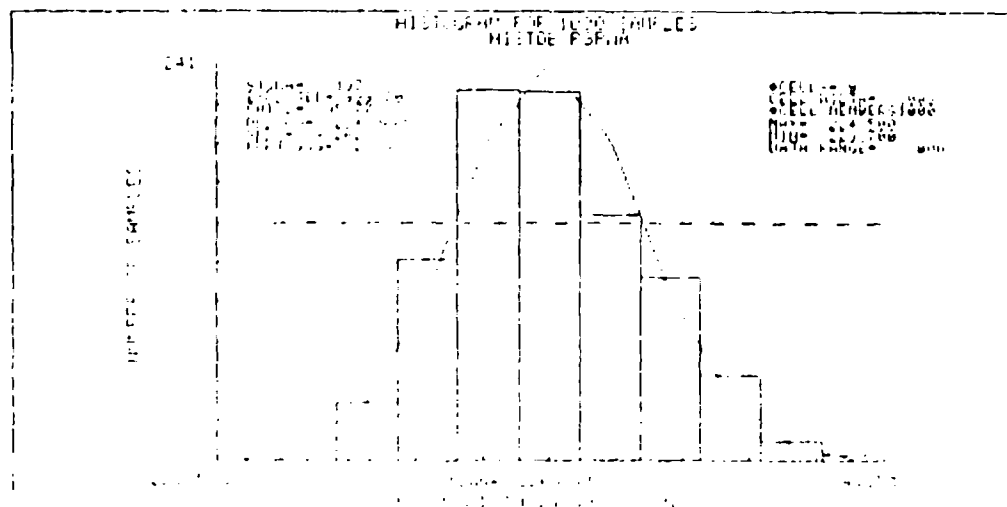
IF N1= 21 CW= .036095238095238

IF N1= 23 CW= .03178214953271

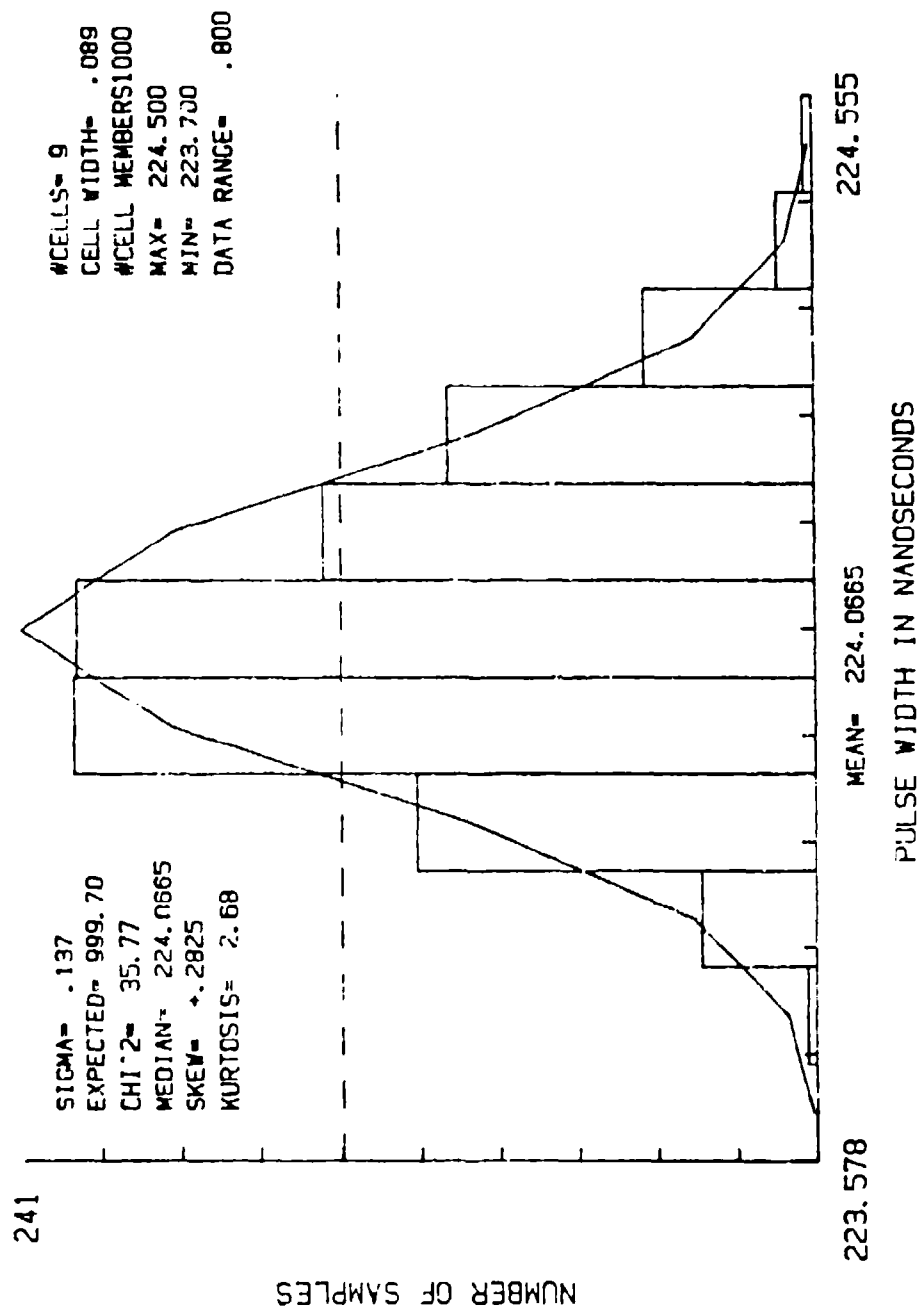
IF N1= 25 CW= .027955555555556

IF N1= 27 CW= .02462962962963

HPL OT EXECUTION TIME= 6.0/MINUTES.



# HISTOGRAM FOR 1000 SAMPLES /HIST08/P3PWA





FILE ZHIST03/P3PWR

PLOT MIN= 223.5776 PLOT MAX= 224.5554  
DATA MIN= 223.7000 DATA MAX= 224.5000

CELL #	CENTER	# SAMPLES	EXPECTED
1	223.6220	0	1.387
2	223.7109	3	9.099
3	223.7998	37	39.309
4	223.8887	130	111.790
5	223.9776	241	209.291
6	224.0665	240	257.949
7	224.1554	160	209.291
8	224.2443	119	111.790
9	224.3332	55	39.309
10	224.4220	12	9.099
11	224.5109	3	1.387

MEAN VALUE= 224.0665  
STANDARD DEVIATION= .1375  
COEFF OF SKEWNESS= 4.2025  
COEFF OF KURTOSIS= 2.6755  
CHI-SQUARED= 35.7668  
MEDIAN X VALUE= 224.0665  
CELL WIDTH= .088889  
PLOT RANGE= .9776  
SUM ACTUAL=1000  
SUM EXPECTED= 999.7025

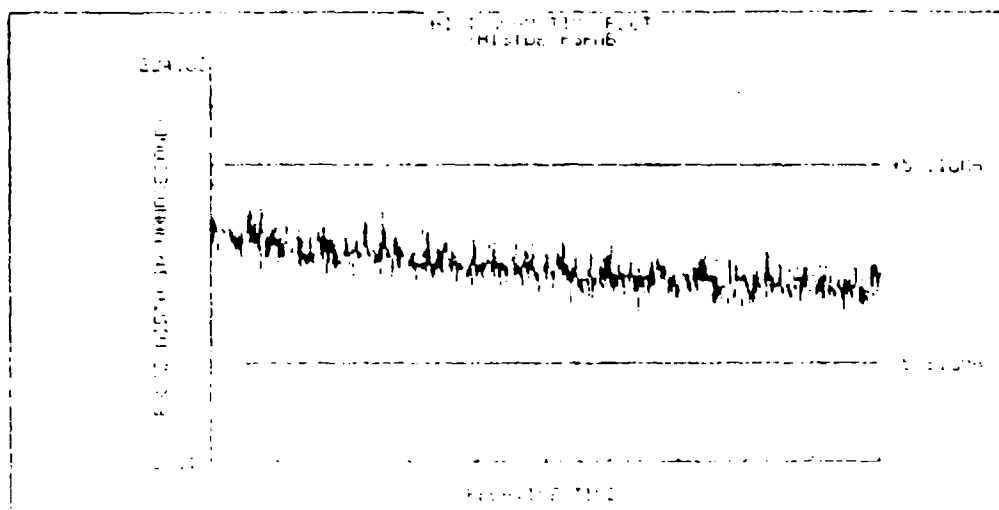
65.1 PERCENT OF DATA LIES BETWEEN 223.9776 AND 224.1554

#### Average Pulsewidth Sampled Data - P3PWB

The statistical results of the average pulsewidth sampled data P3PWB are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

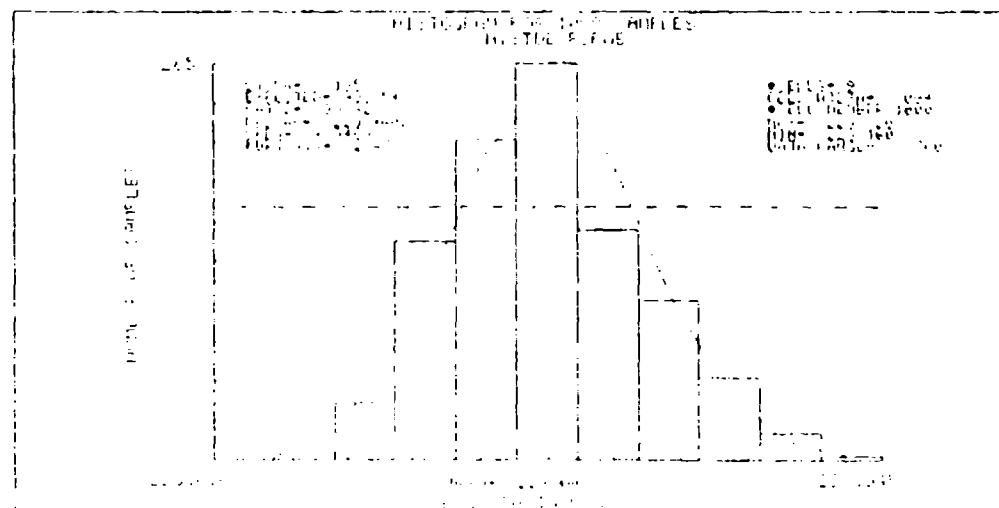
The test results section of this report contains summary statistical information associated with this pulsewidth data set.

MEAN= 223.4837  
 MAX VALUE= 223.9200 MIN VALUE= 223.1000 RANGE= .76  
 SIGMA= .1348  
 COEFFICIENT OF SKEWNESS= 4.3403  
 COEFFICIENT OF KURTOSIS= 2.0050  
 OUT-OF-RANGE DATA POINTS= 0 POINTS

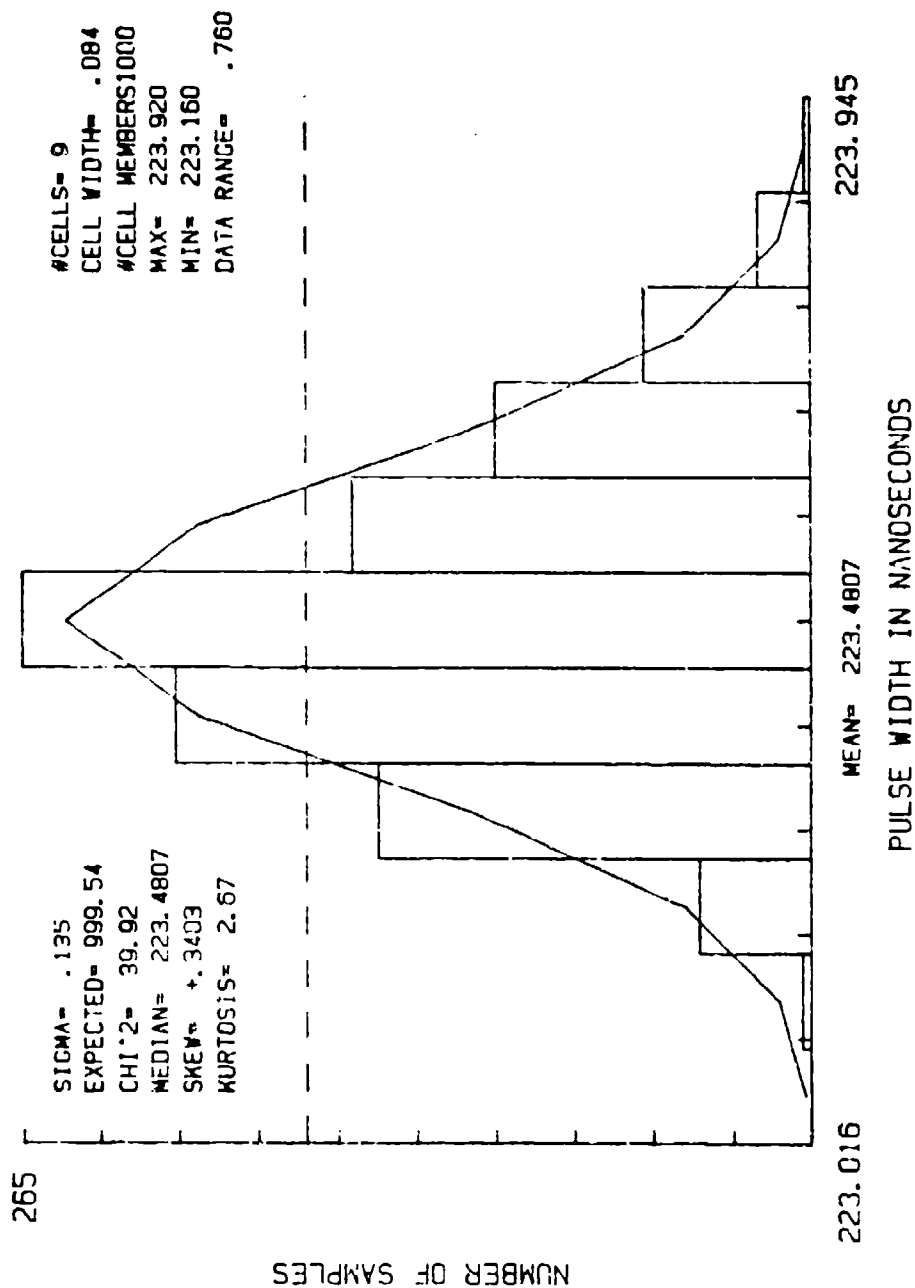


IF N1= 5 CW= .151999999999999  
 IF N1= 7 CW= .106571428571429  
 IF N1= 9 CW= .0814444444444444  
 IF N1= 11 CW= .0635333333333333  
 IF N1= 13 CW= .0504615384615378  
 IF N1= 15 CW= .0400000000000001  
 IF N1= 17 CW= .031720876529126  
 IF N1= 19 CW= .0259999999999999  
 IF N1= 21 CW= .021934761901753  
 IF N1= 23 CW= .0188434782608696  
 IF N1= 25 CW= .0163999999999999  
 IF N1= 27 CW= .014481481481478

HPLOT EXECUTION TIME= 4.10011000E-01



# HISTOGRAM FOR 1000 SAMPLES /HISTDB/P3PWB



FILE ZHISTED/F3PWB

PLOT MIN= 223.0162 PLOT MAX= 223.9451  
DATA MIN= 223.1600 DATA MAX= 223.9200

CELL #	CENTER	# SAMPLES	EXPECTED
1	223.0584	0	1.856
2	223.1429	3	10.839
3	223.2273	38	42.772
4	223.3118	145	114.025
5	223.3962	213	205.354
6	223.4807	265	249.845
7	223.5651	154	205.354
8	223.6495	106	114.025
9	223.7339	56	42.772
10	223.8184	18	10.839
11	223.9029	2	1.856

MEAN VALUE= 223.4807  
STANDARD DEVIATION= .1348  
COEFF OF SKEWNESS= +.3403  
COEFF OF KURTOSIS= 2.6056  
CHI-SQUARE= 39.9164  
MEDIAN VALUE= 223.4807  
CELL WIDTH= .06444  
PLOT RANGE= .8709  
SUM ACTUAL=1000  
SUM EXPECTED= 999.5354

64.5 PERCENT OF DATA LIES BETWEEN 223.3962 AND 223.5651

## APPENDIX G

### INTRODUCTION

ELINT parameter test results are contained in this appendix for the **single pulse frequency parameter** associated with the PPS-6 radar. These measurements were performed with the IFM sensor. The single pulse frequency data sets are labelled :

P1SNABCD

P1SNCDEF

#### Frequency Sampled Data - P1SNABCD

The statistical results of the single pulse frequency sampled data P1SNABCD are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contain summary statistical information associated with this frequency data set.

FILENAME/HDATD/PISNABCD

START TIME IS14:02:1085/09/15

MEAN= 407.4023

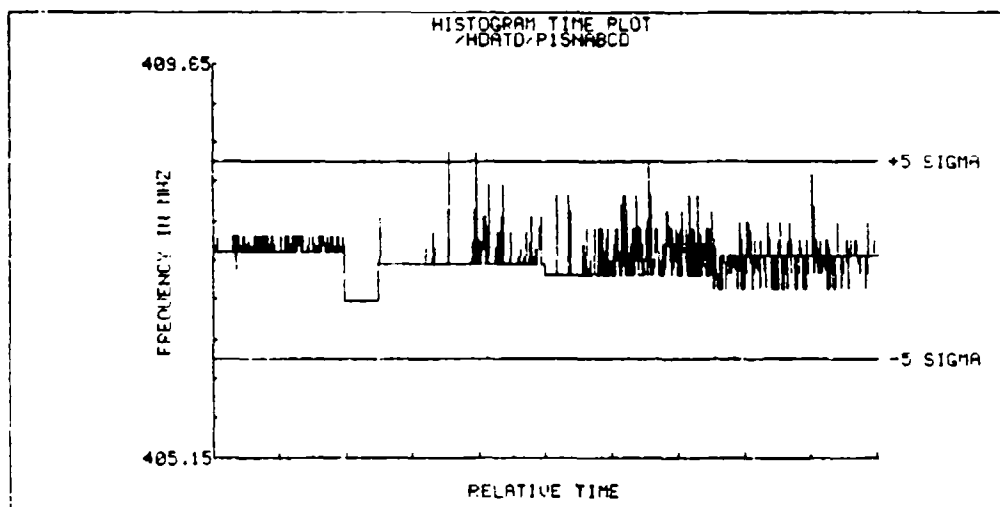
MAX VALUE= 408.6390 MIN VALUE= 406.9300 RANGE= 1.71

SIGMA= .2252

COEFFICIENT OF SKEWNESS= +.4003

COEFFICIENT OF KURTOSIS= 4.4337

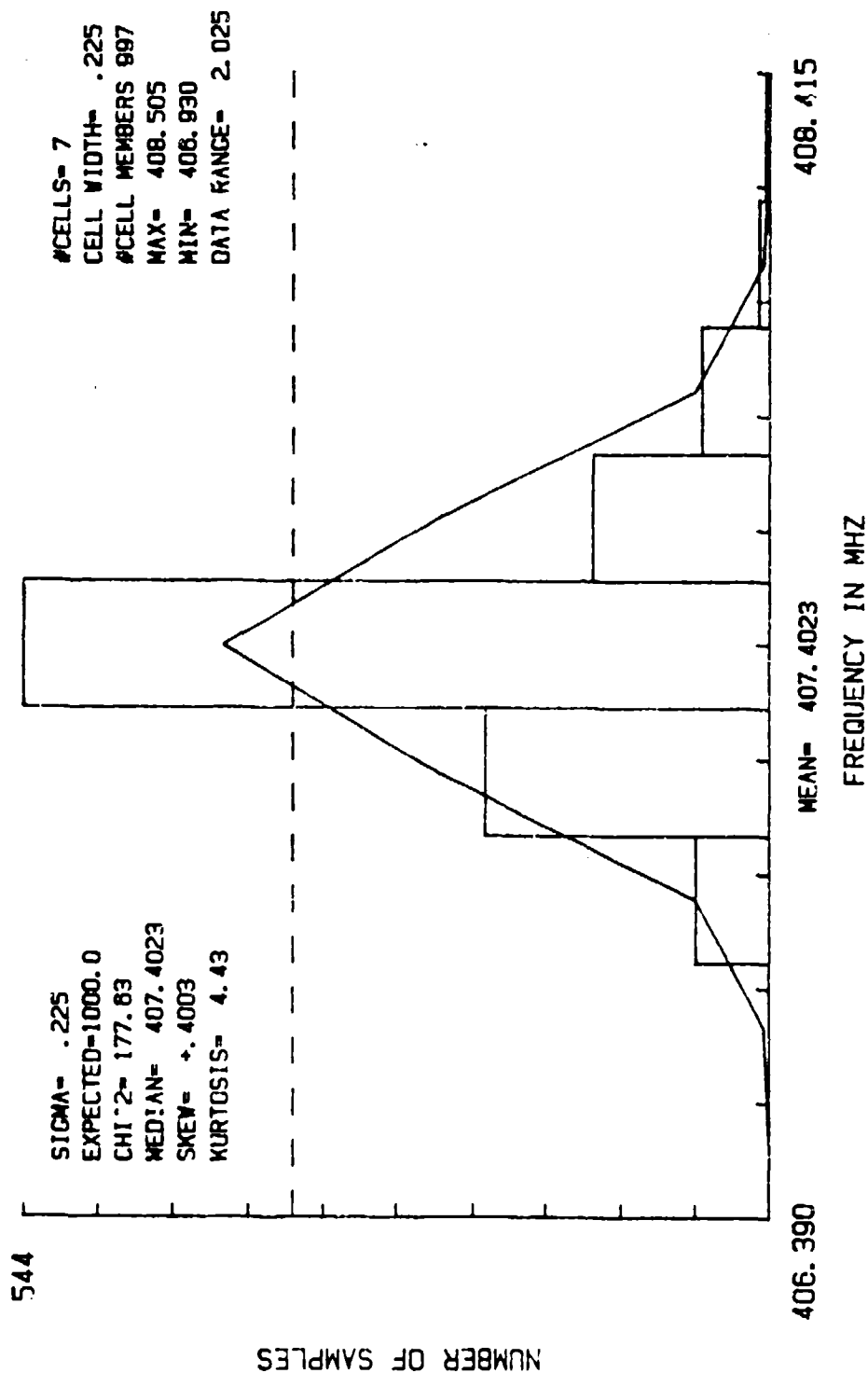
OUT-OF-RANGE DATA POINTS= 2 POINTS



IF N1= 5	CW= .314968000000042
IF N1= 7	CW= .224977142857443
IF N1= 9	CW= .174982222222455
IF N1= 11	CW= .143167272727463
IF N1= 13	CW= .1211415384617
IF N1= 15	CW= .104989333333473
IF N1= 17	CW= .0926376470589469
IF N1= 19	CW= .0828863157895841
IF N1= 21	CW= .0749923809524809
IF N1= 23	CW= .0684713043479173
IF N1= 25	CW= .0629936000000839
IF N1= 27	CW= .0583274074074851



# HISTOGRAM FOR 1000 SAMPLES /H/DATD/P1SNCD /H/DATD/P1SNABCD



FILE /H0ATD/P1SNABCD

PLOT MIN= 406.3899 PLOT MAX= 408.4147  
 DATA MIN= 406.9300 DATA MAX= 408.5048

CELL #	CENTER	# SAMPLES	EXPECTED
1	406.5024	0	.136
2	406.7273	0	4.475
3	406.9523	54	54.187
4	407.1773	208	241.970
5	407.4023	544	398.461
6	407.6273	130	241.970
7	407.8522	50	54.187
8	408.0772	8	4.475
9	408.3022	3	.136

MEAN VALUE= 407.4023  
 STANDARD DEVIATION= .2252  
 COEFF OF SKEWNESS= +.4003  
 COEFF OF KURTOSIS= 4.4337  
 CHI-SQUARED= 177.6337  
 MEDIAN X VALUE= 407.4023  
 CELL WIDTH= .224977  
 PLOT RANGE= 2.0248  
 SUM ACTUAL= 997  
 SUM EXPECTED= 999.9969

76.3PERCENT OF DATA LIES BETWEEN 407.1773 AND 407.4023

### Single Pulse Frequency Sampled Data - P1SNCDEF

The statistical results of the single pulse frequency sampled data P1SNCDEF are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contain summary statistical information associated with this frequency data set.

FILENAME/HOATO/PISNCDEF

START TIME IS14:09:3985/09/15

MEAN= 407.1174

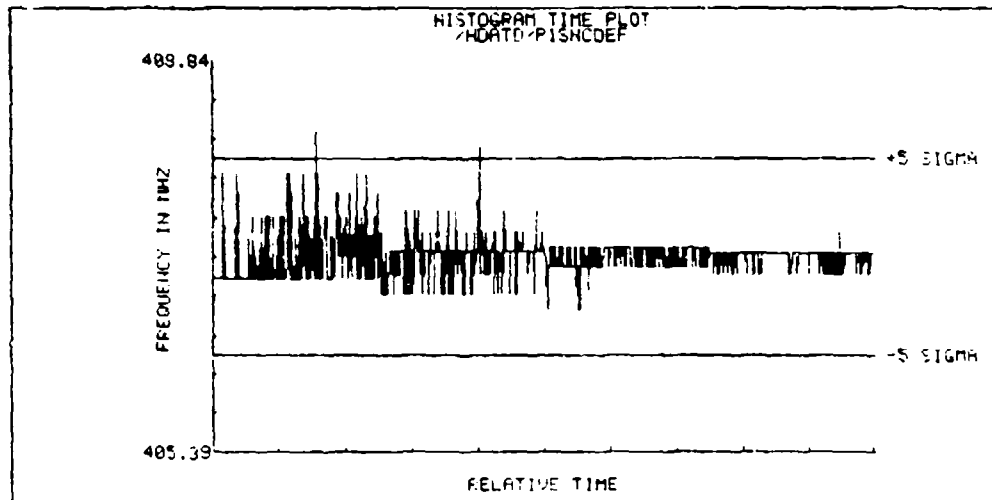
MAX VALUE= 408.2200 MIN VALUE= 406.6562 RANGE= 1.56

SIGMA= .1723

COEFFICIENT OF SKEWNESS= +.7519

COEFFICIENT OF KURTOSIS= 5.1488

OUT-OF-RANGE DATA POINTS= 2 POINTS



IF N1= 5 CW= .23875999999932

IF N1= 7 CW= .170542857142371

IF N1= 9 CW= .132644444444067

IF N1= 11 CW= .108527272726964

IF N1= 13 CW= .0918307692305077

IF N1= 15 CW= .079586666666644

IF N1= 17 CW= .0702235294115647

IF N1= 19 CW= .0628315789471895

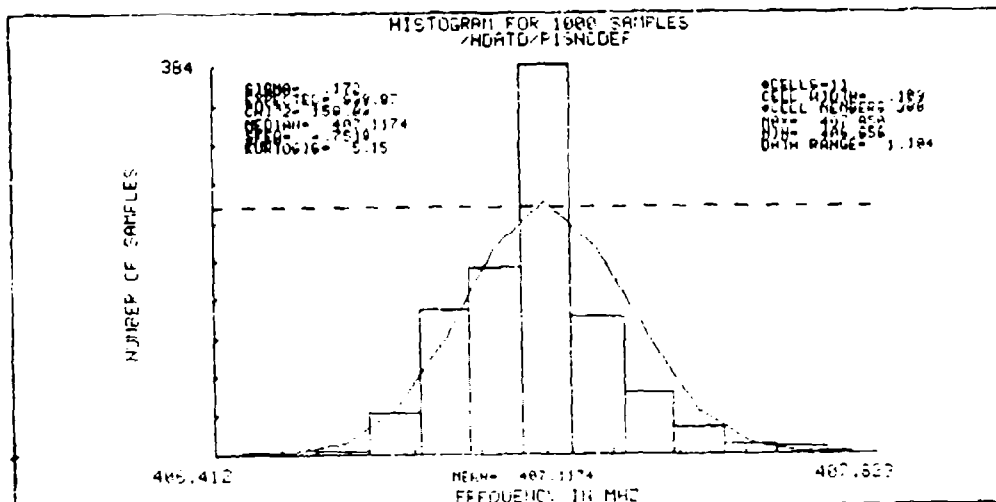
IF N1= 21 CW= .0568476190474571

IF N1= 23 CW= .0519043478259391

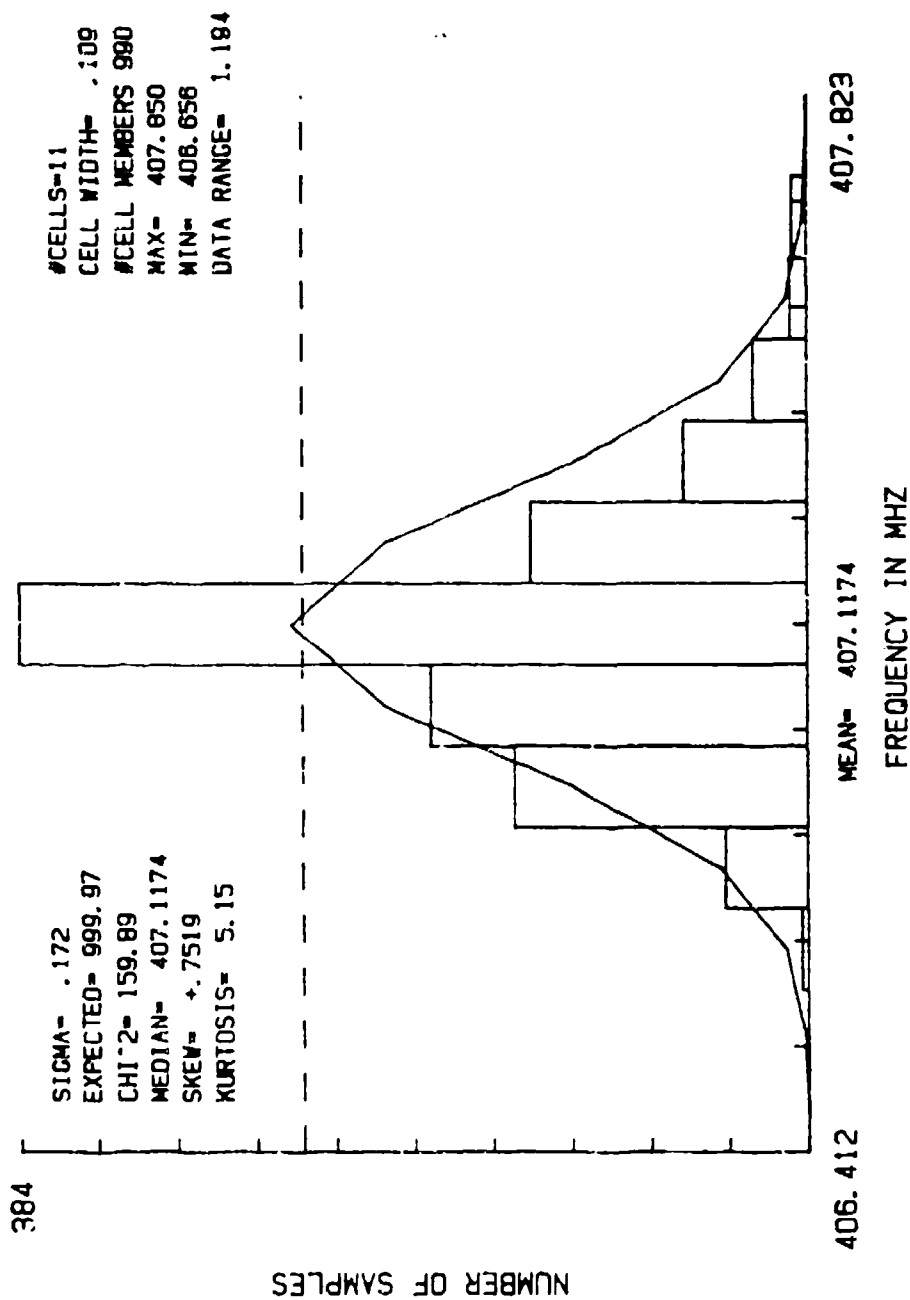
IF N1= 25 CW= .047751999999864

IF N1= 27 CW= .0442148148146889

HPILOT EXECUTING TIME= 4.30MINUTES.



# HISTOGRAM FOR 1000 SAMPLES /HDATD/P1SNCDEF



FILE /HDATA/PISNCOEF

PLOT MIN= 406.4120 PLOT MAX= 407.8229  
 DATA MIN= 406.6562 DATA MAX= 407.8500

CELL #	CENTER	# SAMPLES	EXPECTED
1	406.4663	0	.199
2	406.5748	0	1.767
3	406.6833	3	10.525
4	406.7919	40	42.173
5	406.9004	143	113.661
6	407.0089	184	206.043
7	407.1174	384	251.231
8	407.2260	135	206.043
9	407.3345	60	113.661
10	407.4430	26	42.173
11	407.5515	8	10.525
12	407.6601	7	1.767
13	407.7686	0	.199

MEAN VALUE= 407.1174  
 STANDARD DEVIATION= .1723  
 COEFF OF SKEWNESS= +.7519  
 COEFF OF KURTOSIS= 5.1488  
 CHI-SQUARED= 159.8923  
 MEDIAN X VALUE= 407.1174  
 CELL WIDTH= .108527  
 PLOT RANGE= 1.4109  
 SUM ACTUAL= 990  
 SUM EXPECTED= 999.9681

57.8PERCENT OF DATA LIES BETWEEN 407.0089 AND 407.1174

## APPENDIX H

### INTRODUCTION

ELINT parameter test results are contained in this appendix for the single pulse pulsewidth parameter associated with the PPS-6 radar. These measurements were performed with the Microwave Counter sensor in the single pulse measurement mode of operation. The single pulse frequency data sets are labelled :

P1SPWA

P1SPWB

P1SPWC

P1SPWD

### Single Pulse Pulsewidth Sampled Data - P1SPWA

The statistical results of the single pulse pulsewidth sampled data P1SPWA are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.



FILENAME/HOATO/PISPA

START TIME IS16:14:4985/09/15

MEAN= 309.3760

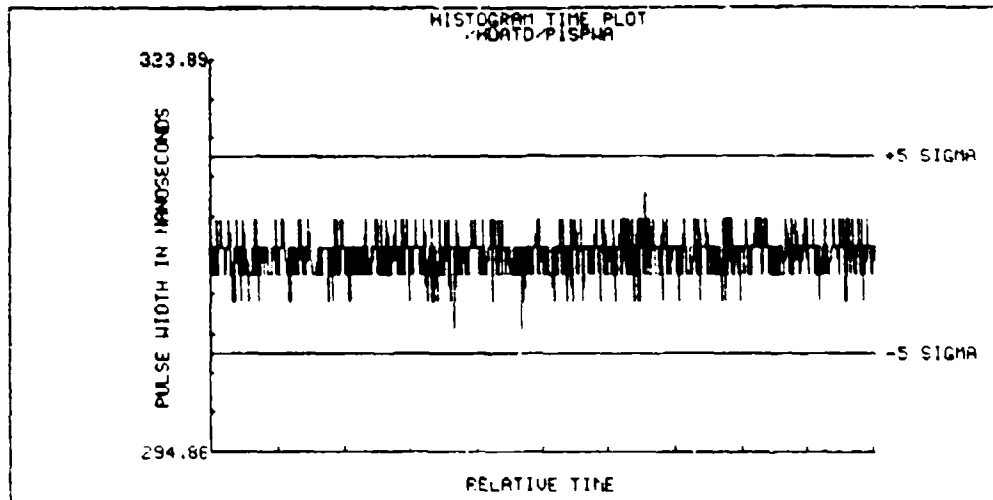
MAX VALUE= 314.0000 MIN VALUE= 304.0000 RANGE= 10.00

SIGMA= 1.4514

COEFFICIENT OF SKEWNESS= -.1849

COEFFICIENT OF KURTOSIS= 3.0815

OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= 2

IF N1= 7 CW= 1.42857142857143

IF N1= 9 CW= 1.11111111111111

IF N1= 11 CW= .909090909090909

IF N1= 13 CW= .769230769230769

IF N1= 15 CW= .666666666666667

IF N1= 17 CW= .588235294117647

IF N1= 19 CW= .526315789473684

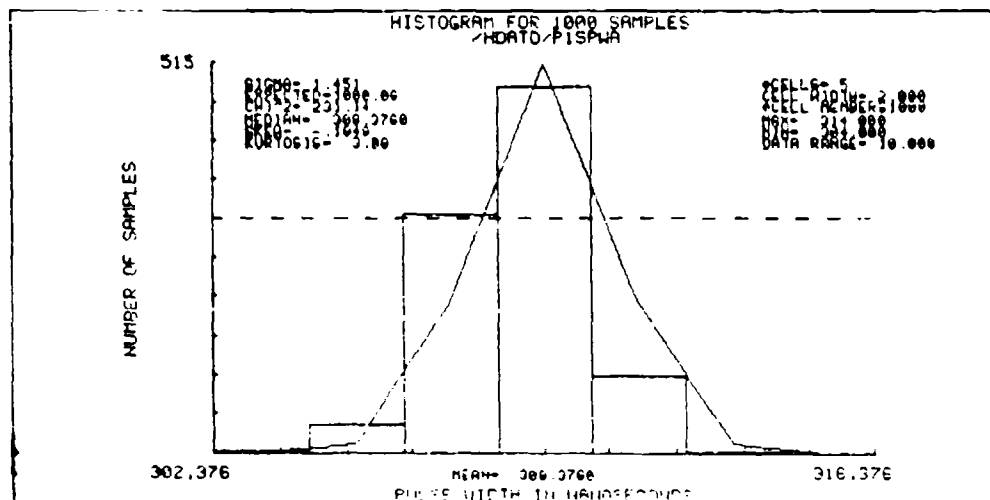
IF N1= 21 CW= .476190476190476

IF N1= 23 CW= .434782608695652

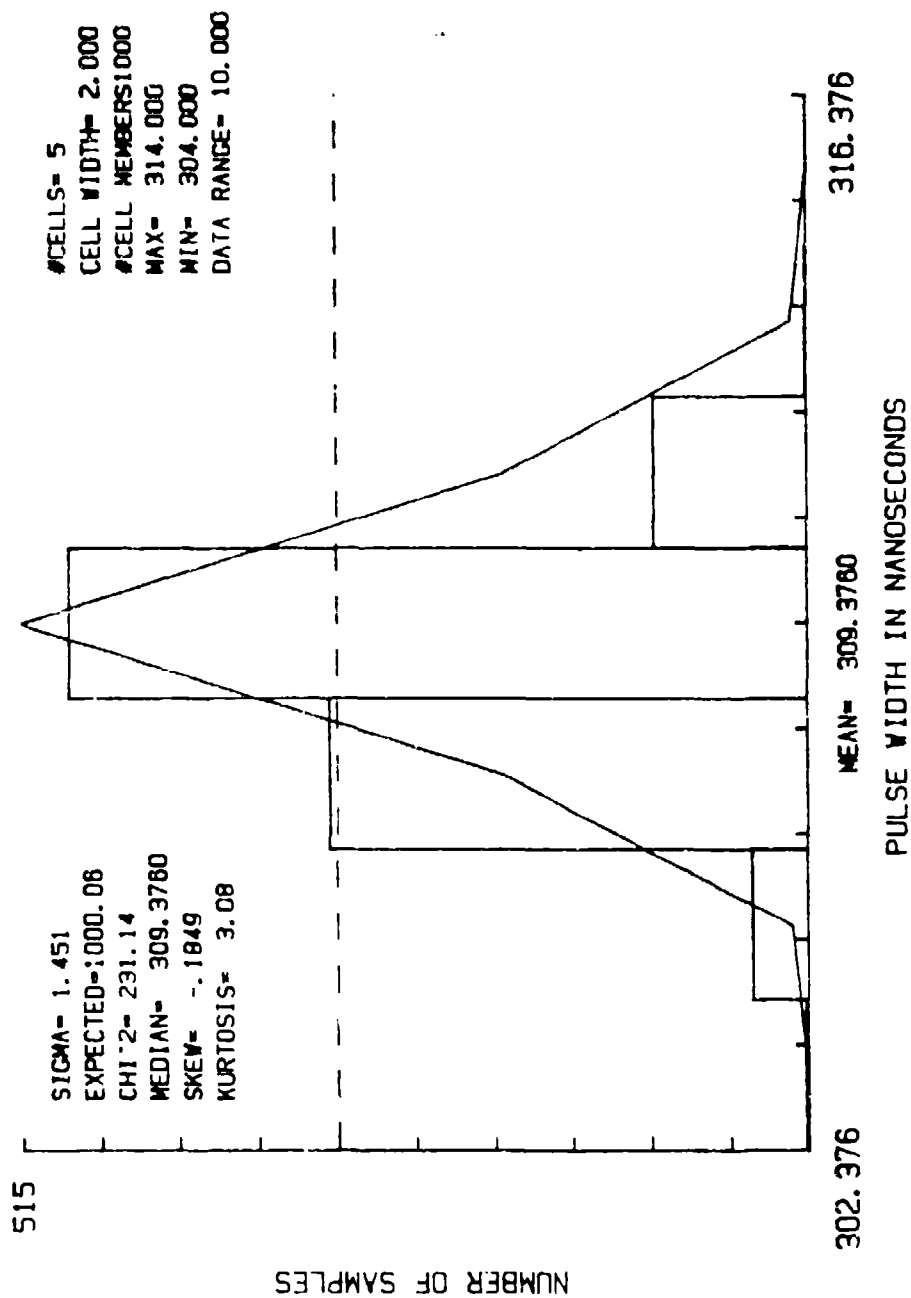
IF N1= 25 CW= .4

IF N1= 27 CW= .37037037037037

HPLLOT EXECUTION TIME= 4.28MINUTES,



# HISTOGRAM FOR 1000 SAMPLES /HDATO/P1SPWA



FILE /HDATA/P1SPWA

PLOT MIN= 302.3760 PLOT MAX= 316.3760  
DATA MIN= 304.0000 DATA MAX= 314.0000

CELL #	CENTER	# SAMPLES	EXPECTED
1	303.3760	2	.107
2	305.3760	40	12.328
3	307.3760	335	212.732
4	309.3760	515	549.726
5	311.3760	107	212.732
6	313.3760	1	12.328
7	315.3760	0	.107

MEAN VALUE= 309.3760  
STANDARD DEVIATION= 1.4514  
COEFF OF SKEWNESS= -.1849  
COEFF OF KURTOSIS= 3.0815  
CHI-SQUARED= 231.1428  
MEDIAN X VALUE= 309.3760  
CELL WIDTH= 2.000000  
PLOT RANGE=14.0000  
SUM ACTUAL=1000  
SUM EXPECTED=1000.0608

85.1PERCENT OF DATA LIES BETWEEN 307.3760 AND 309.3760

### **Single Pulse Pulsewidth Sampled Data - P1SPWB**

The statistical results of the single pulse pulsewidth sampled data P1SPWB are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.

FILENAME/HDATA/PISPB

START TIME IS16:25:2785/09/15

MEAN= 309.3680

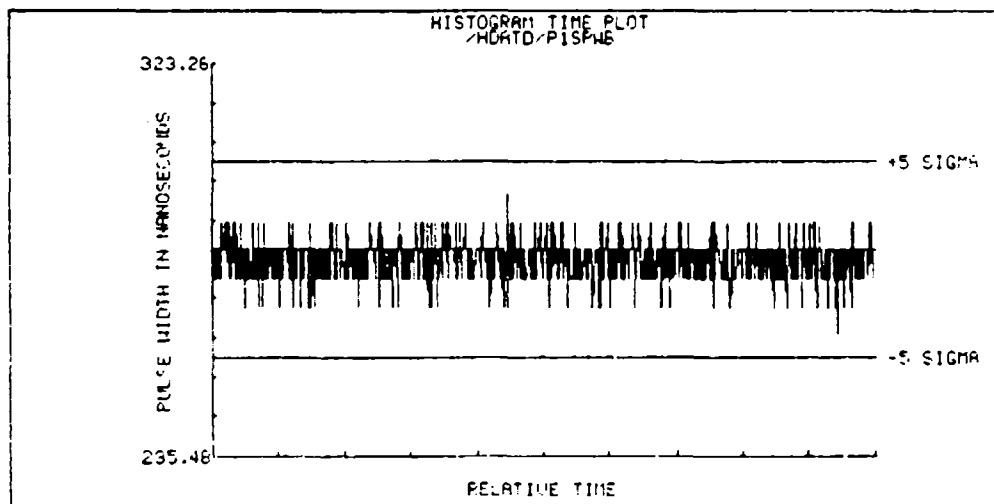
MAX VALUE= 314.0000 MIN VALUE= 304.0000 RANGE= 10.00

SIGMA= 1.3887

COEFFICIENT OF SKEWNESS= -.2371

COEFFICIENT OF KURTOSIS= 3.1611

OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= 2  
IF N1= 7 CW= 1.42857142857143  
IF N1= 9 CW= 1.11111111111111  
IF N1= 11 CW= .909090909090909  
IF N1= 13 CW= .769230769230769  
IF N1= 15 CW= .666666666666667  
IF N1= 17 CW= .588235294117647  
IF N1= 19 CW= .526315789473684  
IF N1= 21 CW= .476190476190476  
IF N1= 23 CW= .434782608695652  
IF N1= 25 CW= .4  
IF N1= 27 CW= .37037037037037

A histogram showing the distribution of pulse widths in nanoseconds. The x-axis is labeled 'PULSE WIDTH IN NANoseconds' and ranges from 302.368 to 316.368. The y-axis is labeled 'NUMBER OF SAMPLES' and ranges from 0 to 546. The histogram consists of several bars, with the tallest bar reaching a value of 546. A normal distribution curve is overlaid on the histogram, peaking at approximately 309.368. A vertical dashed line is drawn at the mean value of 309.368.

STATISTICAL DATA:

- SIGMA= 1.389
- EXPECTED=1000.15
- CHI^2= 263.04
- MEDIAN= 309.3680
- SKEW= -.2371
- KURTOSIS= 3.15

HISTOGRAM PARAMETERS:

- #CELLS= 5
- CELL WIDTH= 2.000
- #CELL MEMBERS1000
- MAX= 314.000
- MIN= 304.000
- DATA RANGE= 10.000

MEAN= 309.3680

302.368 316.368

SIGMA= 1.389  
EXPECTED=1000.15  
CHI^2= 263.04  
MEDIAN= 309.3680  
SKEW= -.2371  
KURTOSIS= 3.15

```
#CELLS= 5
CELL WIDTH= 2.000
#CELL MEMBERS1000
MAX= 314.000
MIN= 304.000
DATA RANGE= 10.000
```

MEAN= 309.3680  
PULSE WIDTH IN NANoseconds  
316.368

FILE /HDATA/P15FWB

PLOT MIN= 302.3680 PLOT MAX= 316.3680  
DATA MIN= 304.0000 DATA MAX= 314.0000

CELL #	CENTER	# SAMPLES	EXPECTED
1	303.3680	1	.051
2	305.3680	39	9.074
3	307.3680	325	203.678
4	309.3680	546	574.542
5	311.3680	88	203.678
6	313.3680	1	9.074
7	315.3680	0	.051

MEAN VALUE= 309.3680  
STANDARD DEVIATION= 1.3887  
COEFF OF SKEWNESS= -.2371  
COEFF OF KURTOSIS= 3.1611  
CHI-SQUARED= 263.0442  
MEDIAN X VALUE= 309.3680  
CELL WIDTH= 2.000000  
PLOT RANGE=14.0000  
SUM ACTUAL=1000  
SUM EXPECTED=1000.1471

87.2PERCENT OF DATA LIES BETWEEN 307.3680 AND 309.3680

### Single Pulse Pulsewidth Sampled Data - P1SPWC

The statistical results of the single pulse pulsewidth sampled data P1SPWC are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.



FILENAME/HDATA/PISPWC  
MEAN= 309.5680

START TIME IS 16:35:1885/09/15

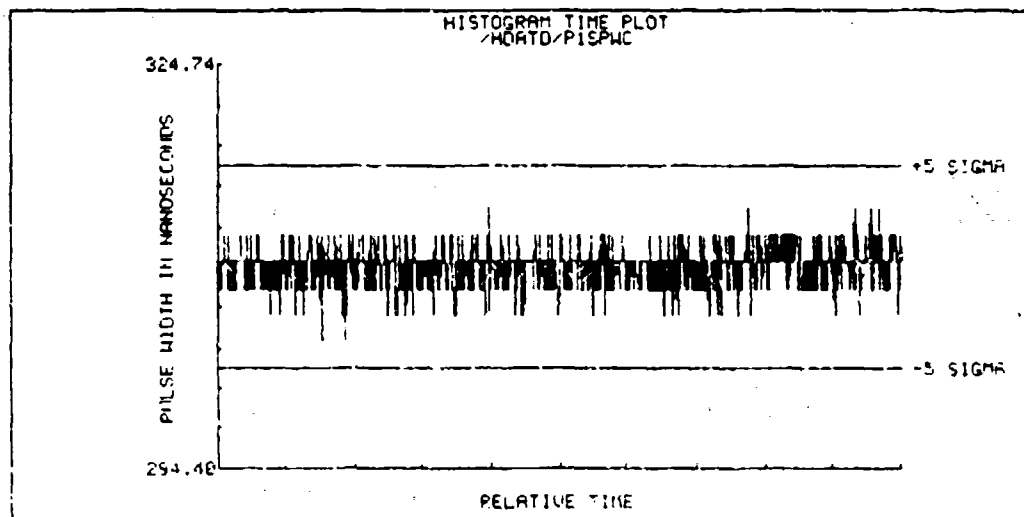
MAX VALUE= 314.0000 MIN VALUE= 304.0000 RANGE= 10.00

SIGMA= 1.5170

COEFFICIENT OF SKEWNESS= -.1263

COEFFICIENT OF KURTOSIS= 3.1634

OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= 2

IF N1= 7 CW= 1.42857142857143

IF N1= 9 CW= 1.11111111111111

IF N1= 11 CW= .909090909090909

IF N1= 13 CW= .769230769230769

IF N1= 15 CW= .666666666666667

IF N1= 17 CW= .588235294117647

IF N1= 19 CW= .526315789473684

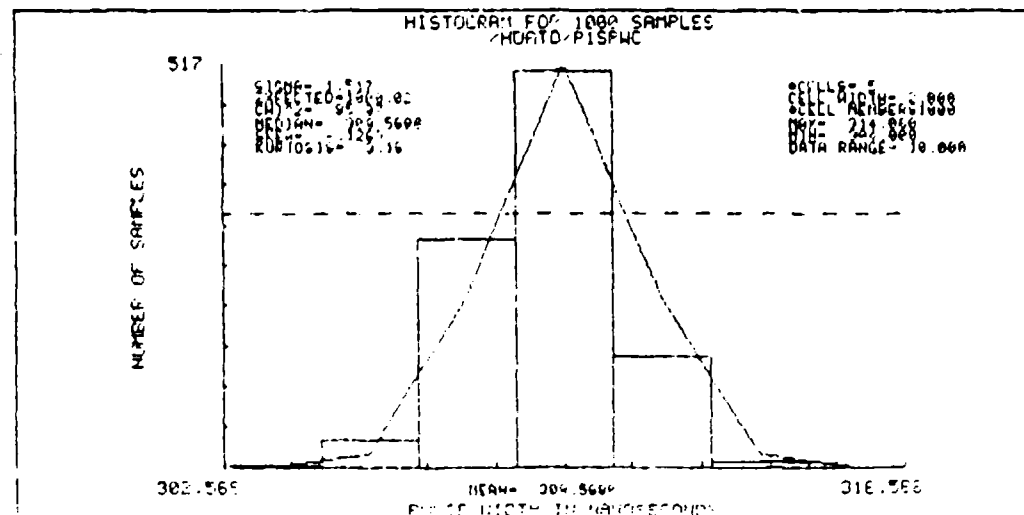
IF N1= 21 CW= .476190476190476

IF N1= 23 CW= .434782608695652

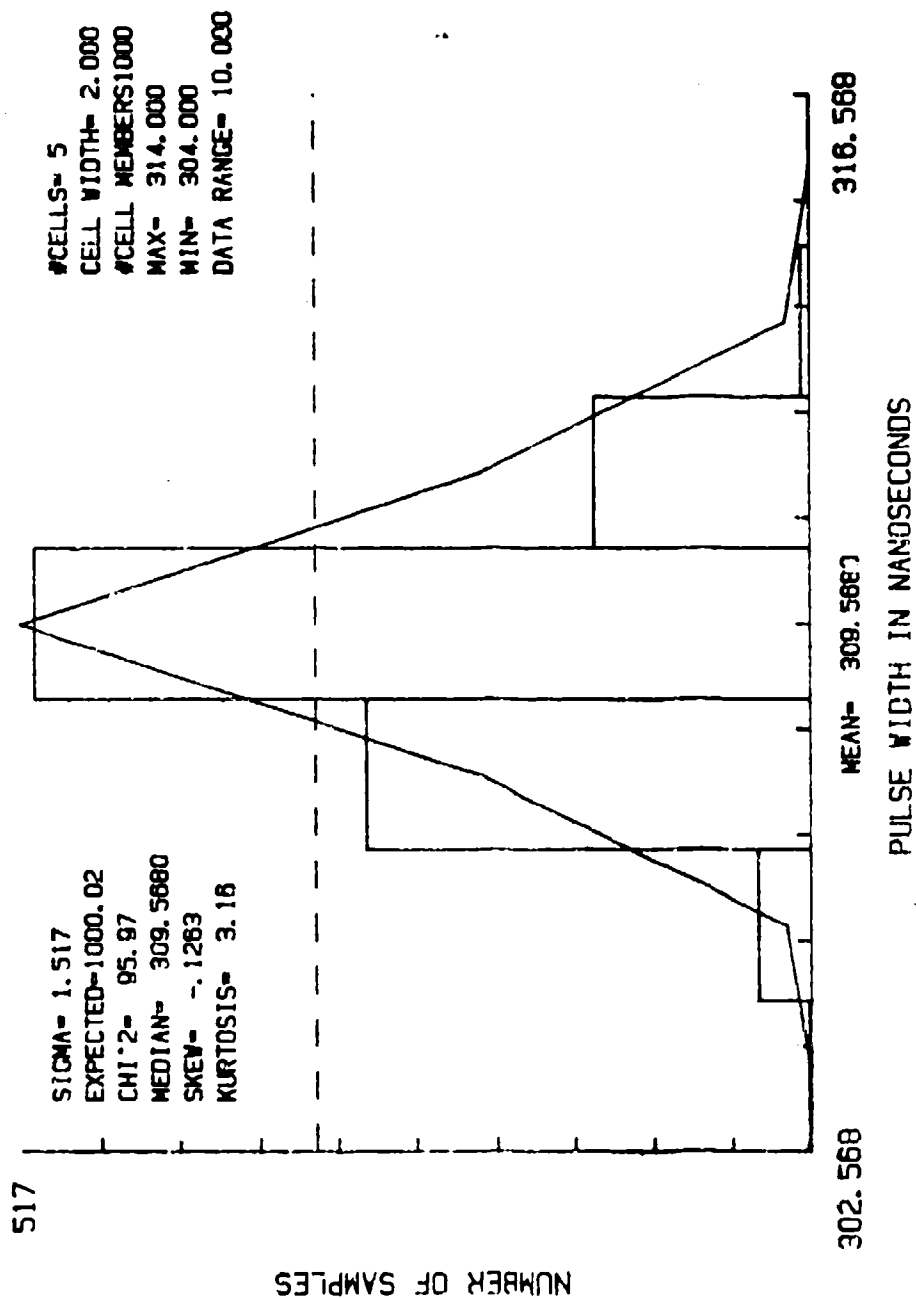
IF N1= 25 CW= .4

IF N1= 27 CW= .37037037037037

HPLOT EXECUTION TIME= 4.20MINUTES.



# HISTOGRAM FOR 1000 SAMPLES /HDATD/P1SPWC



FILE /H0ATD/P1SPWC

PLOT MIN= 302.5680 PLOT MAX= 316.5680  
DATA MIN= 304.0000 DATA MAX= 314.0000

CELL #	CENTER	# SAMPLES	EXPECTED
1	303.5680	2	.211
2	305.5680	35	16.265
3	307.5680	296	220.559
4	309.5680	517	525.952
5	311.5680	144	220.559
6	313.5680	6	16.265
7	315.5680	0	.211

MEAN VALUE= 309.5680  
STANDARD DEVIATION= 1.5170  
COEFF OF SKEWNESS= -.1263  
CCEFF OF KURTOSIS= 3.1634  
CHI-SQUARED= 95.9740  
MEDIAN X VALUE= 309.5680  
CELL WIDTH= 2.000000  
PLOT RANGE=14.0000  
SUM ACTUAL=1000  
SUM EXPECTED=1000.0224

81.8PERCENT OF DATA LIES BETWEEN 307.5680 AND 309.5680

### Single Pulse Pulsewidth Sampled Data - P1SPWD

The statistical results of the single pulse pulsewidth sampled data P1SPWD are presented on the next three pages. Histogram time plots, histograms, and statistical analysis are presented.

The test results section of this report contains summary statistical information associated with this pulsewidth data set.

FILENAME/HDATA/PISPWD

START TIME IS16:42:3285/09/15

MEAN= 319.0440

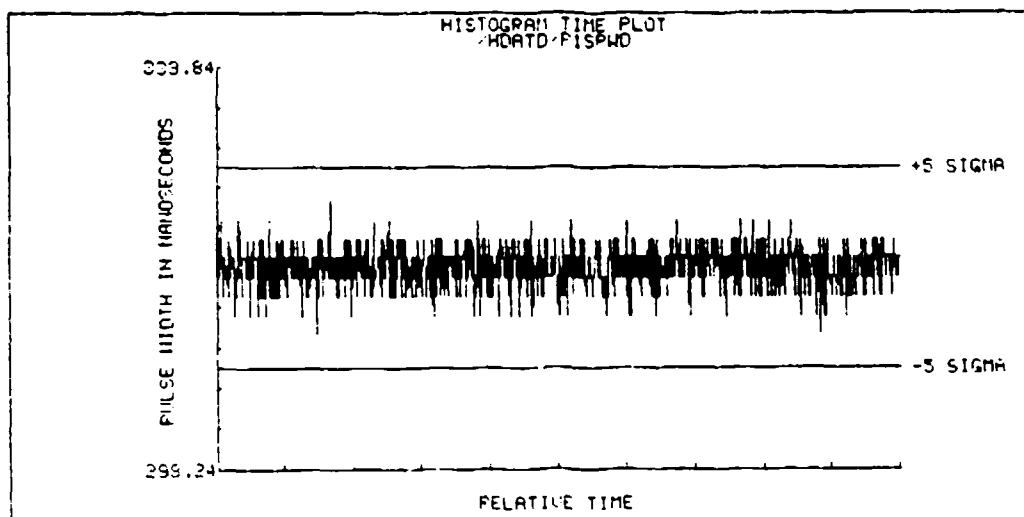
MAX VALUE= 326.0000 MIN VALUE= 312.0000 RANGE= 14.00

SIGMA= 2.0799

COEFFICIENT OF SKEWNESS= -.2080

COEFFICIENT OF KURTOSIS= 2.9956

OUT-OF-RANGE DATA POINTS= 0 POINTS



IF N1= 5 CW= 2.8

IF N1= 7 CW= 2

IF N1= 9 CW= 1.555555555555556

IF N1= 11 CW= 1.2727272727272727

IF N1= 13 CW= 1.07692307692308

IF N1= 15 CW= .9333333333333333

IF N1= 17 CW= .823529411764706

IF N1= 19 CW= .736842105263158

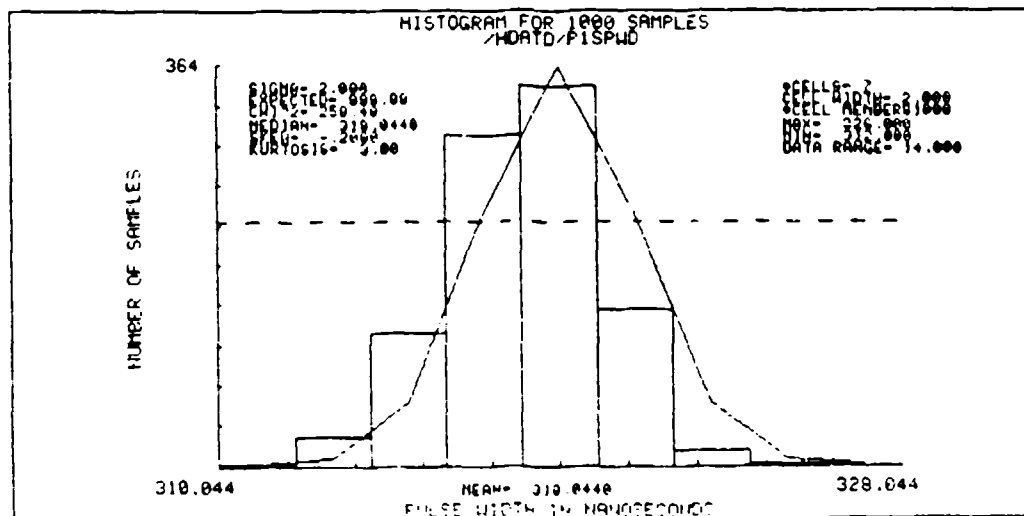
IF N1= 21 CW= .666666666666667

IF N1= 23 CW= .608695652173913

IF N1= 25 CW= .56

IF N1= 27 CW= .518518518518518

HPILOT EXECUTION TIME= 5.70MINUTES.





FILE /HDATA/PISPWD

PLOT MIN= 310.0440 PLOT MAX= 328.0440  
 DATA MIN= 312.0000 DATA MAX= 326.0000

CELL #	CENTER	# SAMPLES	EXPECTED
1	311.0440	2	.235
2	313.0440	27	5.982
3	315.0440	126	60.363
4	317.0440	317	241.609
5	319.0440	364	303.613
6	321.0440	149	241.609
7	323.0440	14	60.363
8	325.0440	1	5.982
9	327.0440	0	.235

MEAN VALUE= 319.0440  
 STANDARD DEVIATION= 2.0799  
 COEFF OF SKEWNESS= -.2080  
 COEFF OF KURTOSIS= 2.9956  
 CHI-SQUARED= 258.4754  
 MEDIAN X VALUE= 319.0440  
 CELL WIDTH= 2.000000  
 PLOT RANGE=18.0000  
 SUM ACTUAL=1000  
 SUM EXPECTED= 999.9926

68.2PERCENT OF DATA LIES BETWEEN 317.0440 AND 319.0440